

**Southern California Regional
Telephone Traveler Information System**

TRANSPORTATION AND COMMUNICATIONS COMMITTEE ATTACHMENT # 5.3

Thursday, June 5, 2003

REPORT

DATE: May 21, 2003

TO: Transportation & Communications Committee

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RE: **SOUTHERN CALIFORNIA REGIONAL 511 TELEPHONE TRAVELER INFORMATION SYSTEM**

Recommend Action: Receive and File

Background

Intelligent Transportation Systems (ITS) are playing a much more vital role in our transportation system. The investments in ITS as a means of enhancing mobility, improving safety, has been enormous. The public and private sectors have been working together to utilize ITS strategies to better serve the public.

A great deal of information is collected via ITS. Providing access to transportation information via one nationwide, three-digit telephone number is a means to make the most of that investment. That is, to get that information to the public by the most common means of communication the telephone. One easy-to-remember number, 511, regardless of the traveler's location, gives travelers' choices -- choice of time, choice of mode of transportation, and choice of route.

Implementation and deployment of the 511 Telephone Traveler Information System in the SCAG region involves a complex and complicated process. In a large, multi-jurisdictional area such as ours many issues must be addressed prior to any attempt to deploy the 511 traveler information number. Deployment of the 511 number would require a regionwide consensus. And, to reach such consensus, Institutional roles and responsibilities pertaining to operation and financing of the system must be determined.

SCAG staff prepared a broad review of ongoing national and local issues necessary to develop and deploy a 511 traveler information system in the SCAG Region. The results of SCAG analysis of 511 issues were presented for review by Caltrans and the County Transportation Commissions participating in the Regional 511 Task Force. Based upon input from the 511 Task Force the following recommendations were made to further regional efforts necessary to seek opportunities to deploy a 511 system.

1. Pursue opportunities for public-private demonstrations for implementation of 511 Telephone Traveler Information System.

REPORT

2. Pursue private sector opportunities for deployment of 511 Telephone Traveler Information System.

Fiscal Impact

None

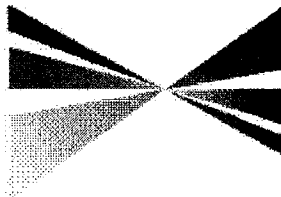


Travel Info

**SOUTHERN CALIFORNIA
REGIONAL TELEPHONE
TRAVELER INFORMATION SYSTEM**

- DRAFT -

April 2003



SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

ABSTRACT

Implementation and deployment of the 511 Telephone Traveler Information System in the SCAG region involves a complex and complicated process. In a large, multi-jurisdictional area such as ours many issues must be addressed prior to any attempt to deploy the 511 traveler information number. Deployment of the 511 number would require a regionwide consensus. And, to reach such consensus, institutional roles and responsibilities pertaining to operation and financing of the system must be determined.

The purpose of this report is to provide a broad understanding of the 511 Telephone Traveler Information System; existing traveler information systems in the SCAG region; current efforts and activities underway in other regions of the country pertaining to deployment of the 511 number; key implementation issues; and a discussion of issues that must be addressed within the region.

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I. OVERVIEW

On July 21, 2000 The Federal Communications Commission (FCC) designated "511" as the nationwide telephone number for traveler information. This decision was in response to a request by the United States Department of Transportation (USDOT) for establishment of a single, easy-to-remember three-digit dialing code. According to USDOT, in the United States, there are currently several hundred telephone numbers in use for traveler information systems.

Provision of the 511 number would potentially offer the public the means to have easy access to the information they need in order to make informed transportation choices. Availability of the 511 number to regional and local transportation agencies would offer the general public a multi-modal traveler information system. It could include several categories of information such as real time traffic, ridematching, transit, commuter rail, weather and highway construction. Currently, each region and agency has a different telephone number for various services.

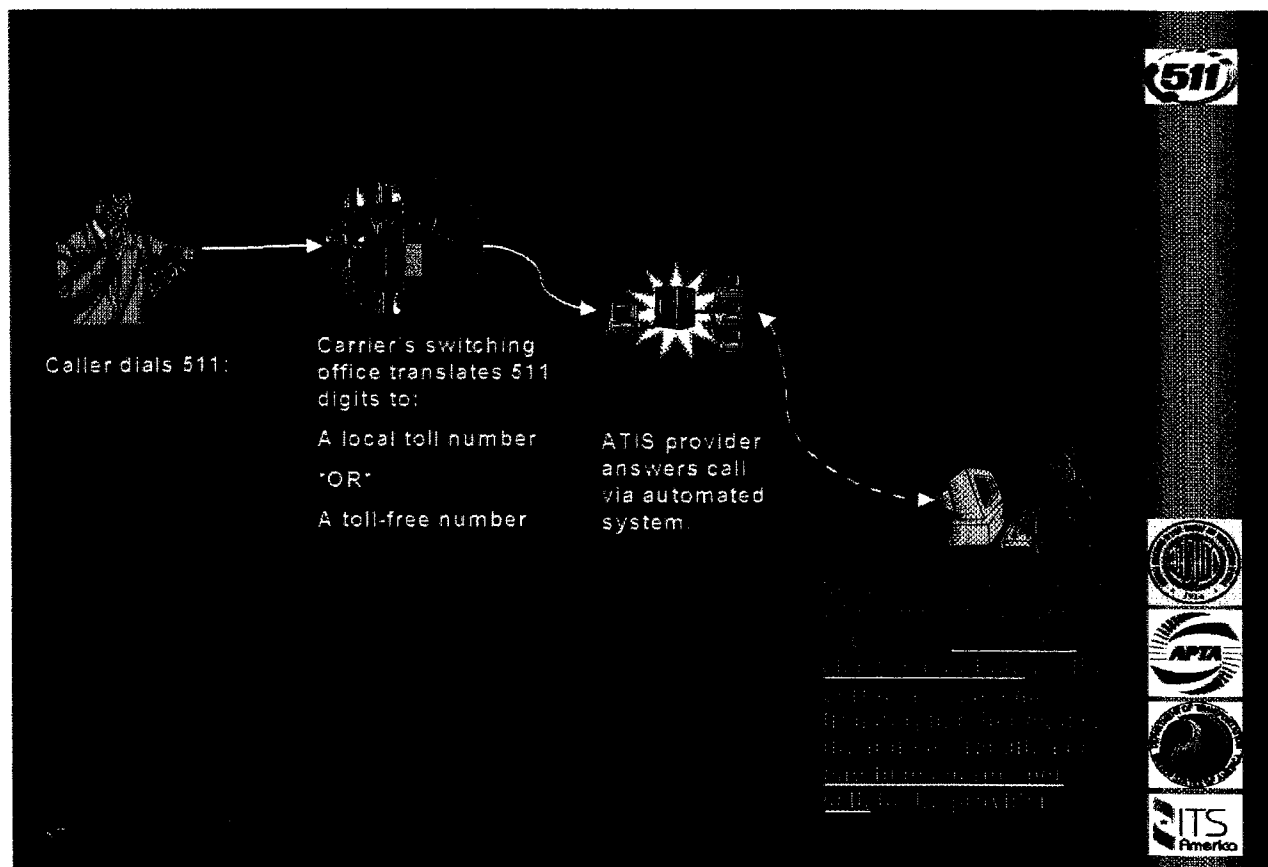
The federal government does not mandate implementation of the 511 number. The FCC ruling leaves nearly all implementation issues and schedules to state and local agencies and telecommunications carriers. There are no Federal requirements and no mandated way to pay for 511; however, the USDOT and the FCC expect to see some type of nationwide deployment. In 2005, the FCC will review progress in implementation of the 511 traveler information number.

II. HOW DOES 511 WORK

Intelligent Transportation Systems (ITS) are playing a much more vital role in our transportation system. The investments in ITS as a means of enhancing mobility, improving safety, has been enormous. The public and private sectors have been working together to utilize ITS strategies to better serve the public.

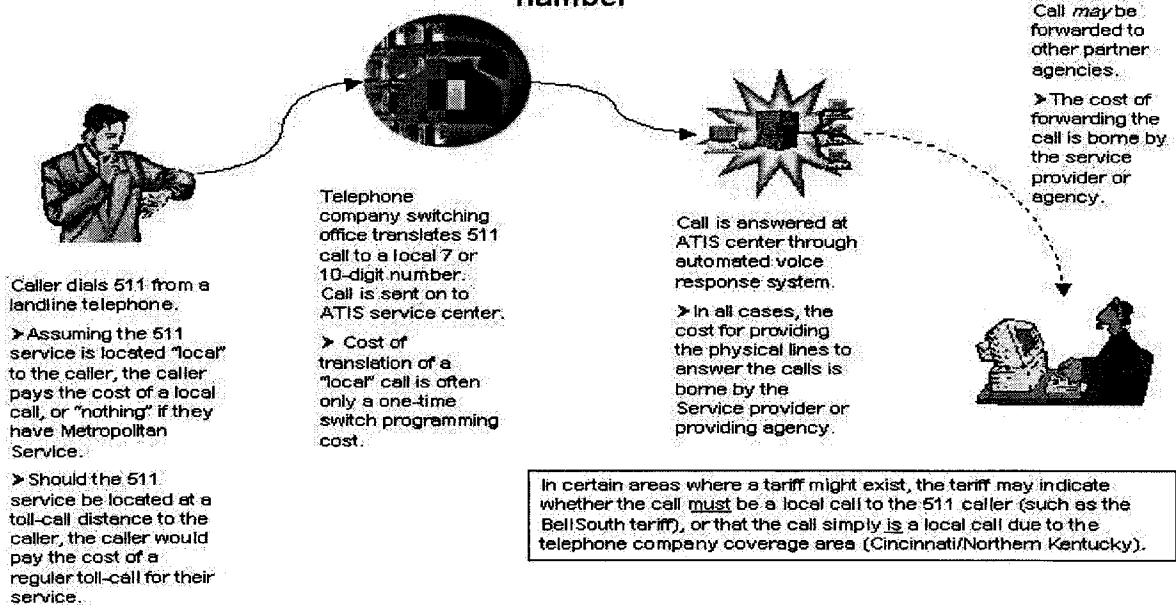
A great deal of information is collected via ITS. Providing access to transportation information via one nationwide, three-digit telephone number is a means to make the most of that investment. That is, to get that information to the public by the most common means of communication the telephone. One easy-to-remember number, 511, regardless of the traveler's location, gives travelers' choices -- choice of time, choice of mode of transportation, and choice of route.

To better understand how a 511 call works the following diagram is provided to illustrate the steps involved:

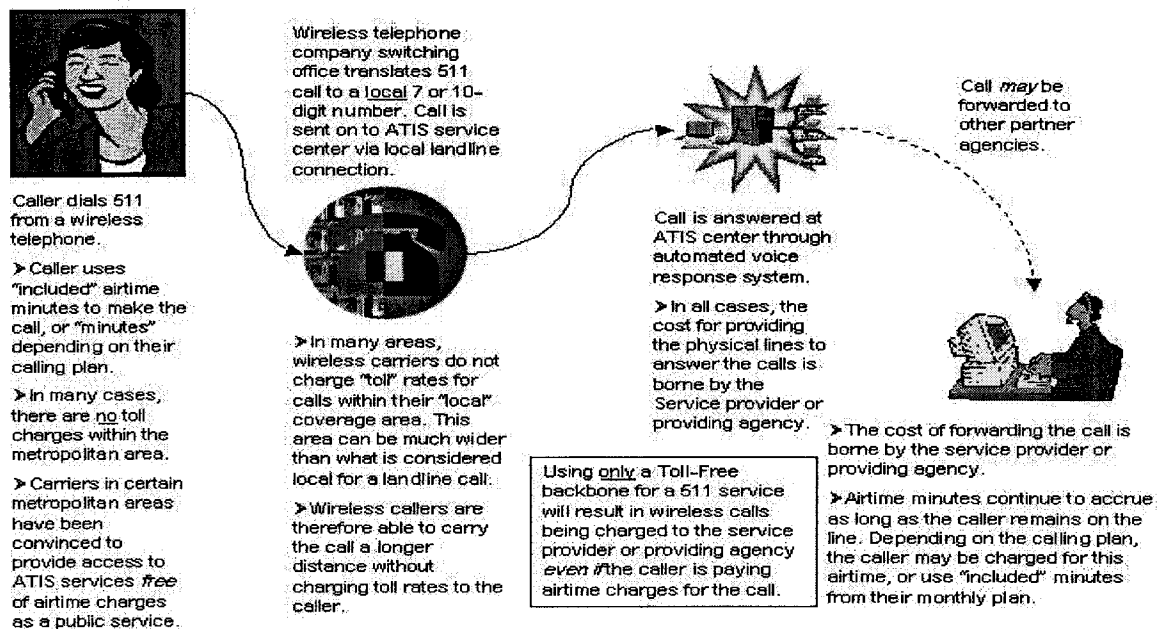


Tracking a 511 Call

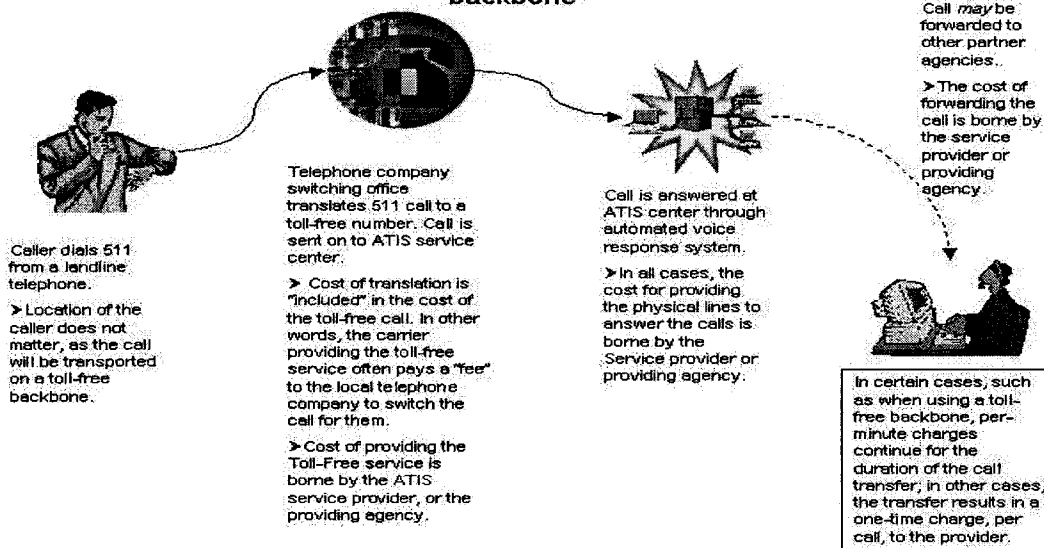
Tracking a 511 call using a "regular" 7 or 10-digit number



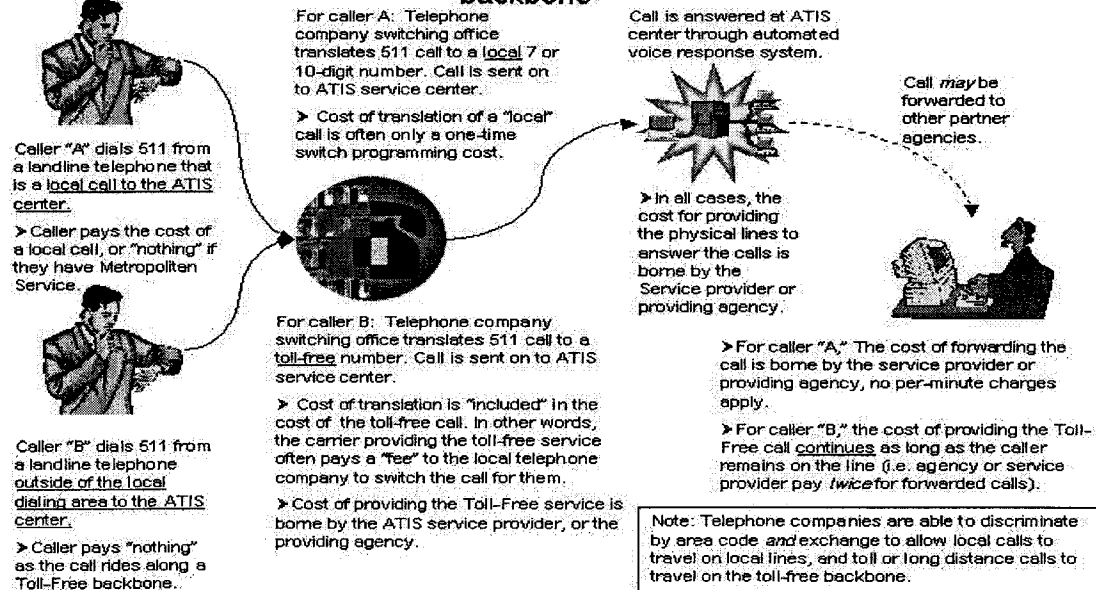
Tracking a 511 call using a wireless phone



Tracking a 511 call using a Toll-Free number or backbone



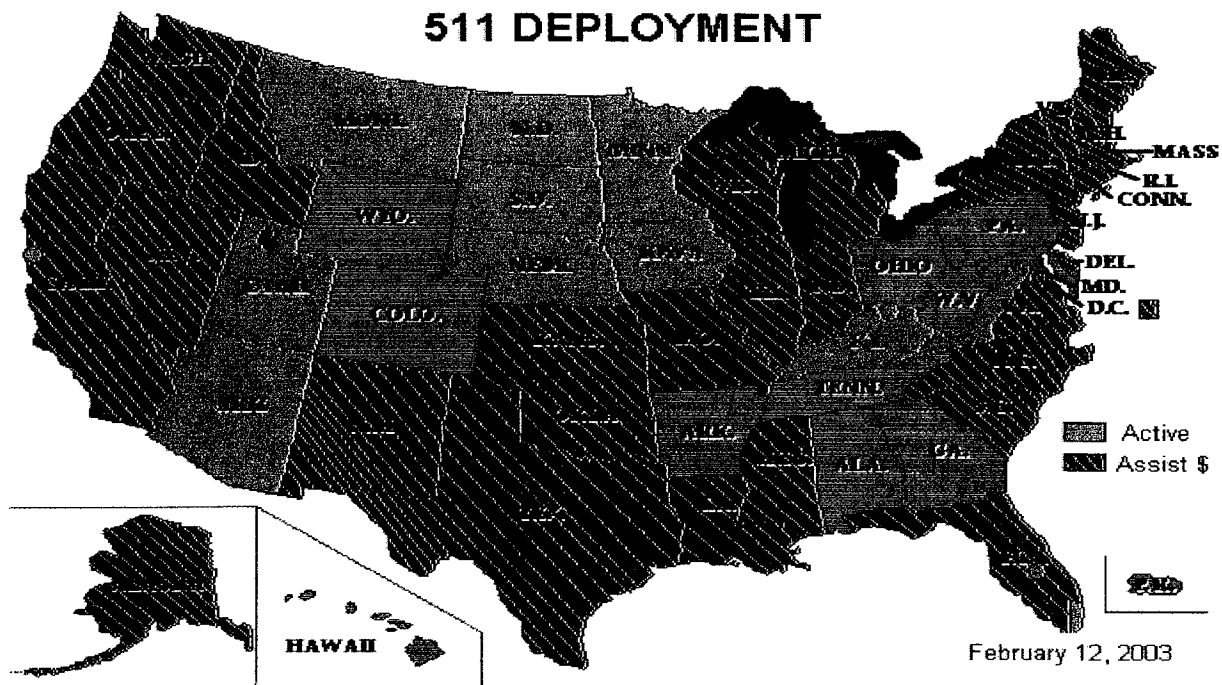
Tracking a 511 call using a Local and Toll-Free backbone



III. NATIONAL 511 DEPLOYMENT OVERVIEW

Deployment of the 511 has progressed rapidly since July 2000 when the Federal Communications Commission (FCC) designated 511 as the national travel information number. The first 511 service was launched less than a year later (June 2001) in Northern Kentucky, and by the beginning of 2003 more than a dozen 511 systems had launched. According to the National 511 Coalition, active 511 Systems as of February 28, 2003 include:

- Cincinnati / Northern Kentucky
- Nebraska
- Utah
- I-81 Corridor in Virginia
- Arizona
- Orlando
- Minnesota
- SE Florida
- Washington State
- Iowa
- South Dakota
- Kentucky Statewide
- San Francisco Bay Area
- Montana
- North Dakota



Source: 511 Deployment Coalition

Table 1: 511 Deployment Timeline

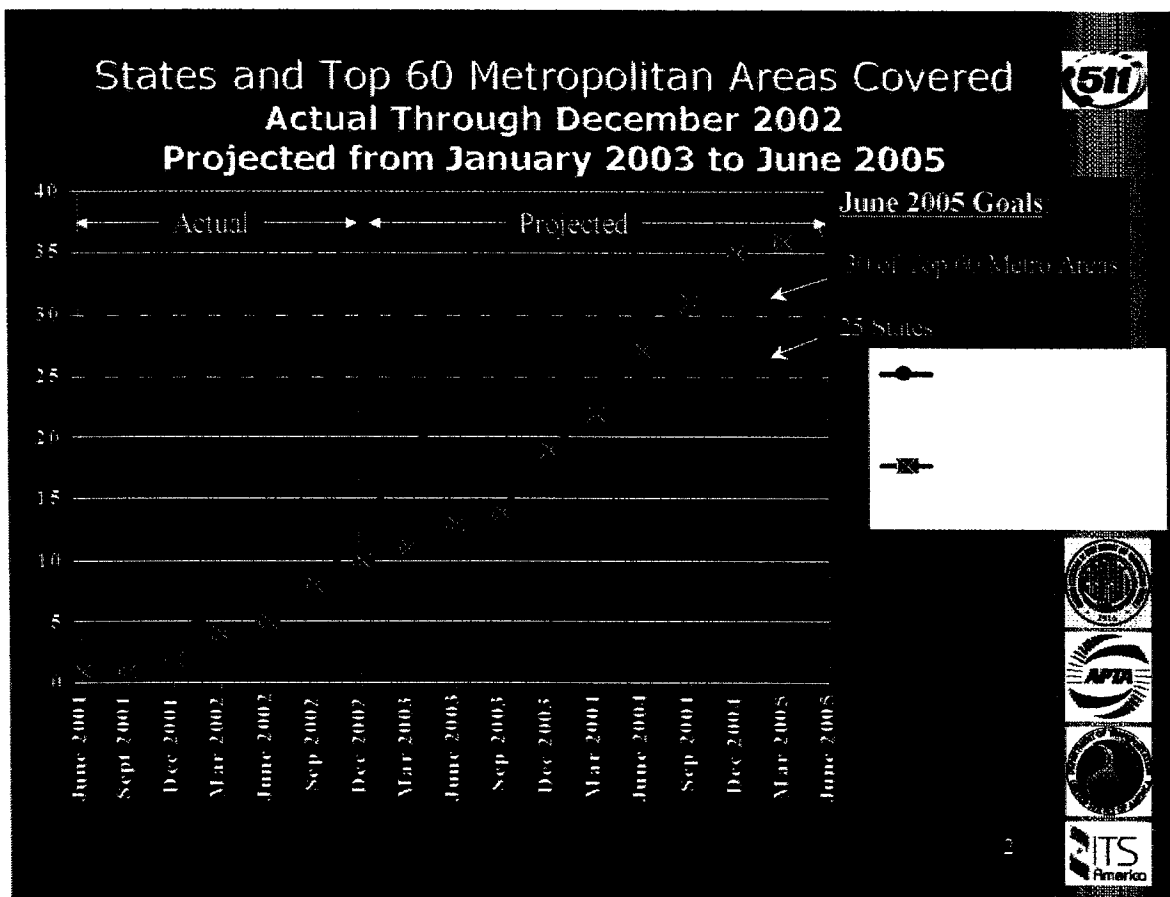
Launch Date	Location	Description
June 11, 2001	Cincinnati/Northern Kentucky	Metro area
October 1, 2001	Nebraska	Statewide
December 18, 2001	Utah	Statewide
February 15, 2002	I-81 Corridor in Virginia	Regional
March 20, 2002	Arizona	Statewide
June 24, 2002	Orlando	Regional
July 1, 2002	Minnesota	Statewide
July 16, 2002	South Florida	Miami, West Palm Beach, Dade, Broward, and parts of Monroe Counties
September 16, 2002—pilot only	Washington	Statewide
November 22, 2002	South Dakota	Statewide
November 22, 2002	Iowa	Statewide
November 27, 2002	Kentucky	Statewide
December 6, 2002	San Francisco Bay Area	TravInfo
January 8, 2003 live; January 14, 2003 public launch	Montana	Greater Yellowstone / Statewide
Jan/February, 2003 acceptance test; public launch TBD	Kansas	Statewide
February 10, 2003	North Dakota	Statewide
March, 2003 website; June 2003 phone service	Alaska	Statewide
March, 2003	New Mexico	Statewide
Winter, 2003	Missouri	Initially I-70 Corridor; eventually statewide
May, 2003	Maine	Statewide
Early 2003	New Hampshire	Statewide
Early 2003	Vermont	Statewide
Summer/Fall 2003	Boston	Metro area
Fall 2003	Oregon	Statewide
Fall 2003	Nevada	Statewide
November, 2003 (around Thanksgiving for Raleigh area)	North Carolina	Statewide 2003
2003	Tampa	Metro area
2003-2004	Michigan	Statewide
2004	California	Rural statewide
2004	Illinois	Statewide
mid-2004	Florida	Statewide
2005	Virginia	Statewide

Source: 511 Deployment Coalition

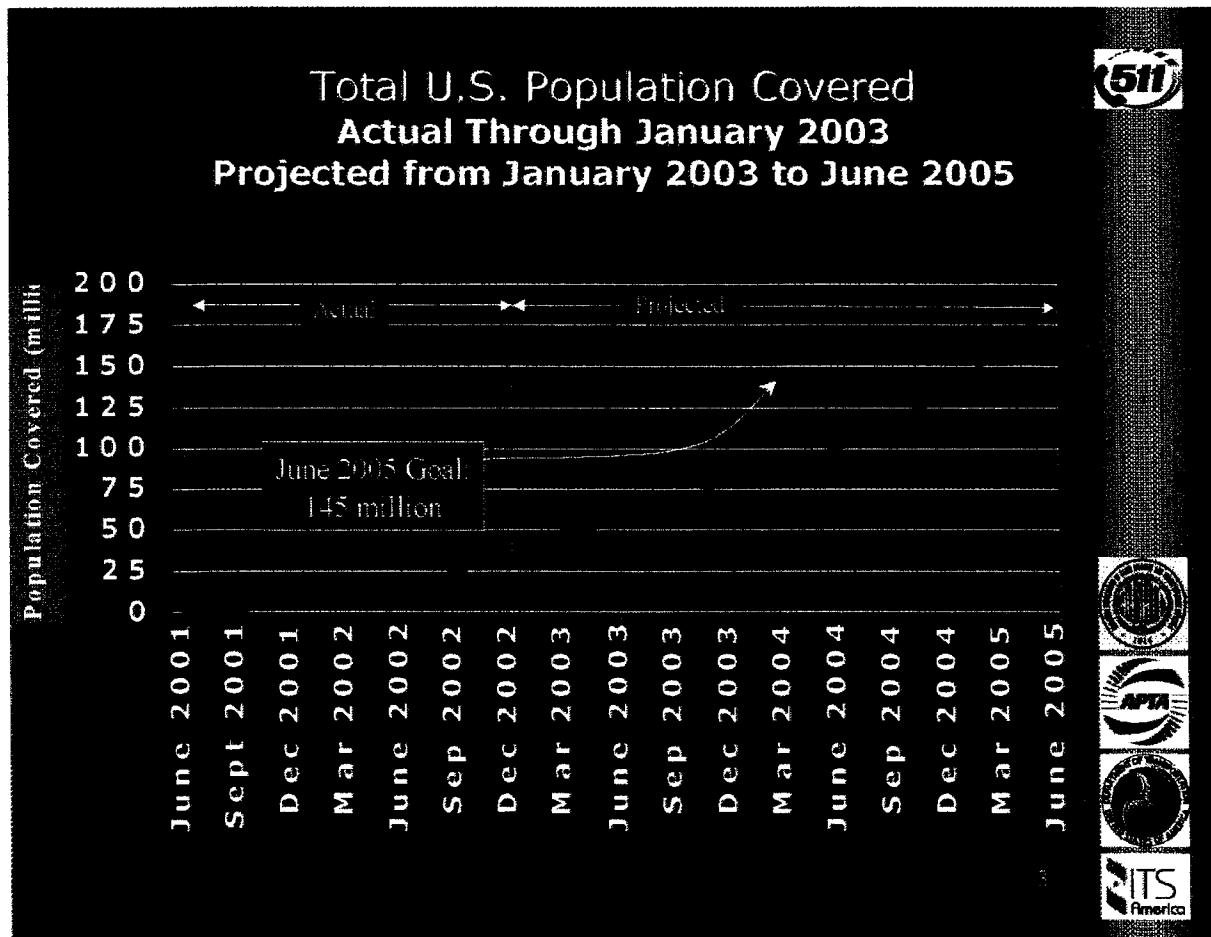
Usage Statistics For 511 Nationwide

As reported by the national 511 Deployment Coalition:

- As of February 2003, there were 918,822 Total 511 calls, nationwide. This number represents a 32.5% increase from January 2003 with an average call length of 2 minutes for a total of over 1,933,000 minutes of call time.
- Over 5.6 million calls have been placed to 511 to date.
- Southeast Florida (for the second month in a row), the I-81 Corridor in VA, Minnesota, Iowa and Montana and saw their highest monthly call volumes to date.
- Systems deployed for one year saw a 35.1% increase in usage.
- Peak usage was experienced during winter storms.



Source: 511 Deployment Coalition



Source: 511 Deployment Coalition

IV. BAY AREA DEPLOYMENT

Since 1996, the San Francisco Bay Area Metropolitan Transportation Commission (MTC) has operated TravInfo as a comprehensive system to gather, organize and disseminate timely information on San Francisco Bay Area traffic and road conditions, public transit routes and schedules, carpooling, highway construction and road closures, van and taxi services for disabled travelers, park-and-ride facilities, and bicycle programs. The project's day-to-day management team operates with policy direction from the Freeway Management Program Executive Committee (MTC, Caltrans District 4, and the Golden Gate Division of the California Highway Patrol (CHP)). The historical focus of TravInfo's data dissemination has been the Traveler Advisory Telephone System (TATS). Callers anywhere in the Bay Area can reach the TATS by dialing the same seven-digit number, 817-1717, without the need to dial an area code (there are presently six area codes in the area). Call volumes average 65,000 per month, with 70% of the calls routed to transit agencies. The service is free to callers, though local toll charges may apply.

511 Vision

At the earliest practical time, TravInfo will be accessible via 511 in the present nine county area served by 817-1717 today. Further, as a means to provide information to those coming to but not yet in the Bay Area, MTC will be exploring ways callers outside the area will be able to access the same information (e.g., via a 1-800 toll-free number). Concurrently, MTC is upgrading its entire traveler information system to improve the quality, accuracy and timeliness of available information and increase the number of road miles of coverage. Thus, the 511 service will be supported by higher quality information over a greater geographic coverage area.

Ongoing Activities

Four key activities are:

- **Call Routing:** MTC is working with SBC/Pacific Bell, the dominant landline carrier to determine the most cost-effective and fairest method, technically and contractually, to route calls via 511. Additionally, MTC is determining the most efficient Interactive Voice Response system architecture to cost-effectively serve the nine-county, six area code region.
- **Information Enhancements:** Upgrades in data collection, data fusion, agency coordination and information dissemination will continue.
- **Marketing:** Significant resources (over \$1M annually) has been allocated in the coming years to market TravInfo, with the principal focus of the marketing being the phone service.

- **Statewide Coordination:** MTC is working closely with Caltrans and other regions in California to facilitate an orderly, coordinated deployment of 511 throughout the state.

Lessons learned

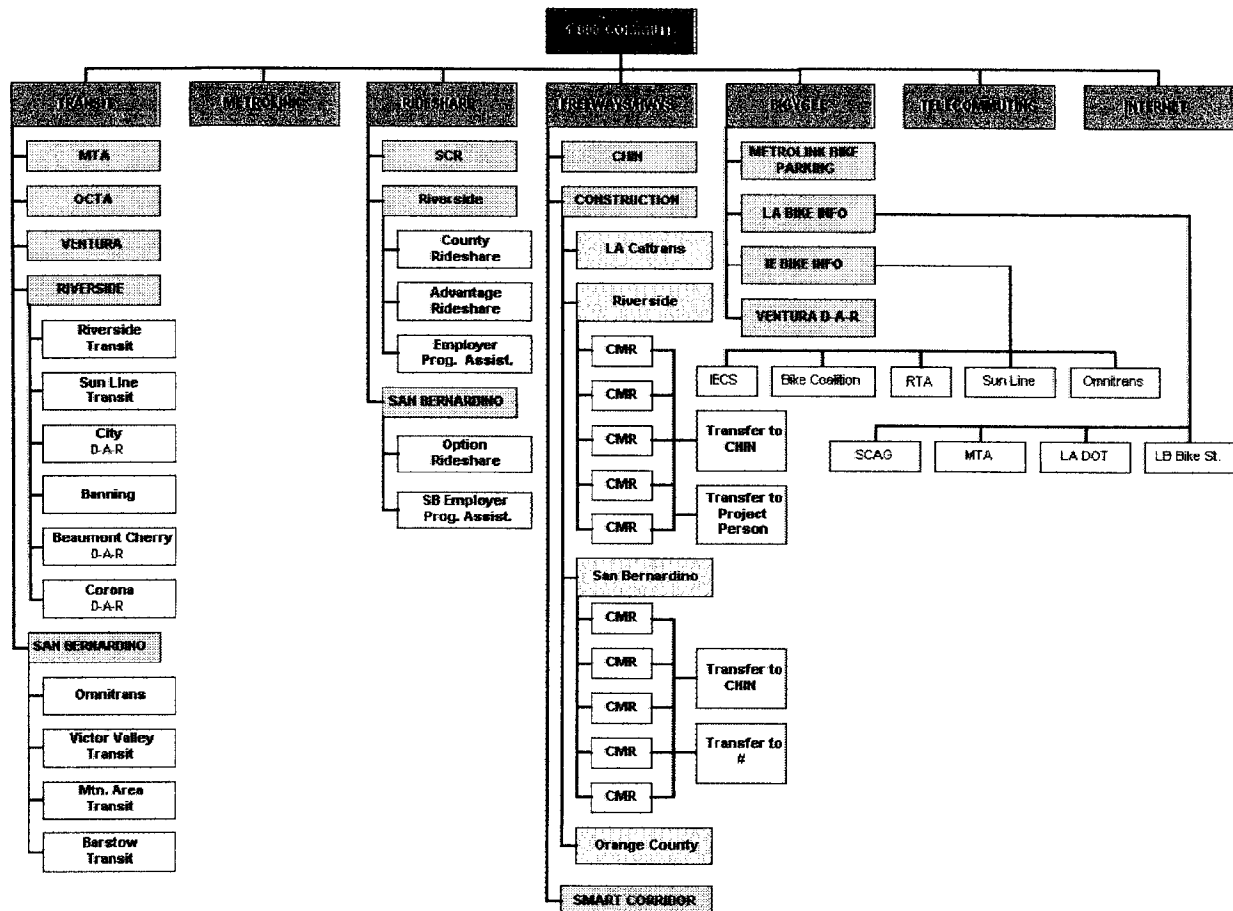
- For a regional agency seeking to implement 511 access promptly, it is helpful to find a state agency to support the regional agency's intentions.
- Key steps along the critical path for 511 access are to gain a commitment of resources by local telecommunications carriers and to have them develop appropriate service offerings.
- Substantial marketing is required to create awareness and usage of the service.

V. SOUTHERN CALIFORNIA REGION TRAVELER INFORMATION

In the SCAG region, there are approximately seventy telephone numbers used for providing traveler information to the public. In addition to each agency's own telephone number, Caltrans funds a toll-free traveler information number. The "1-800-COMMUTE" number (Diagram 6) offers the public an automated system that allows the user to access information on transit, commuter rail, ridesharing, road conditions, bicycling and telecommuting. Caltrans first established the "1-800-COMMUTE" number, in response to the 1994 Northridge earthquake. Its purpose is to provide a single, toll-free telephone number for accessing various travel modes and services. The system is currently funded by Caltrans.

Current ATIS Access through 1-800-COMMUTE

The SCAG Region has had access to transit and rideshare information through the 1-800-COMMUTE number. This service is ongoing and is well established with strong usage and "brand" identification with the public through past outreach efforts, roadside signage, and common usage on the printed materials for numerous transit operators. Thus, in one sense the region has already established a version of "511", although with a different telephonic prefix.



Private Telephonic or Pager Traffic Services

The SCAG Region has a variety of private firms that have offered, or are offering traffic information through telephonic or pager services. These services are often focused on incidents on major freeways and various services offer alphanumeric messages, or in a few cases allow a voice response to ask for conditions on freeways. These services are typically either subscription services, or value added services included in communications services to enhance the marketing of the communications product. An example of this type of service would be Cue, which is affiliated with the Traveler Advisory News Network as an ISP (Information Service Provider). TANN also produces traffic speed and incident XML data to voice conversion information the public can access via a 1-800 number. In addition TANN publishes real time traffic congestion maps on WAP cell phones. Other telephonic based services are operated by OCTA and Caltrans as part the Model Deployment Initiative. These services provide limited data on such things as construction and closures, or for specific project impact mitigation.

Internet Based Traveler Information Services

The SCAG Region has a number of Internet based Traveler Information Services, including data providers which “fuse” data for specific telephonic, pager, or handheld communications and personal computing devices. Data sources for these devices originate primarily from public sector detection systems that collect and disseminate the data. These include Caltrans TMC data, CHP data, and data from local arterials such as the City of Los Angeles ATSAC system. Caltrans has very rich coverage of traffic sensors, video cameras and changeable message signs in the region with more to come.

By Comparison to the national data on 511 the 1-800-Commute program today provides only Transit information to over 800,000 monthly calls at a cost of approximately \$1,000,000 annually.

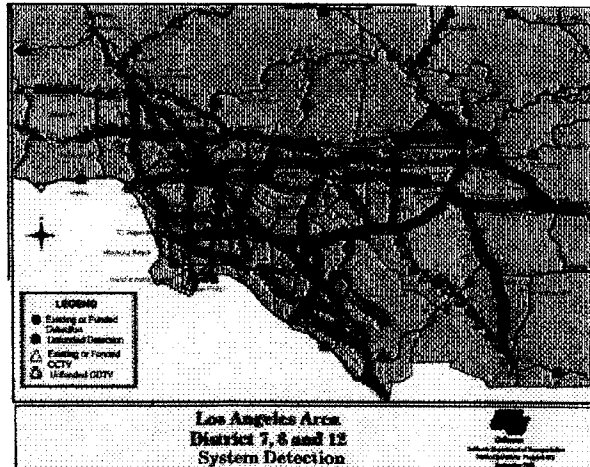
Data is not widely available for the various internet based traffic sites, or for privately operated telephonic traffic services. However, data for TANN identifies over 200,000 user addresses, making over 3,000,000 monthly page view or inquiries for traffic speeds, traffic accidents, traffic video, or transit information.

Public Sector ATIS Efforts

A number of public sector ATIS deployment efforts are underway in the SCAG Region, these include the Orange County Travel TIP project, Los Angeles Ventura ATIS, and the Modeshift project. These offer a variety of transit schedule, fare and/or itinerary information using in-house data bases, or connecting to SCAG’s Transtar system. These efforts also are including various Caltrans and Local Arterial traffic data, incident and event data from local or CHP sources, Changeable Message Sign (CMS)

messages, and both still update and streaming traffic video. In addition, several local agencies offer transit or traffic data on their own web sites, such as City of Los Angeles with ATSAC data, and “real time” transit data from Nextbus and Siemens systems in Glendale, Long Beach, and Ventura County.

The next graphic illustrates the Caltrans coverage of speed data collection in the region. The green represents the existing and red planned. Caltrans also has a significant number of freeway video cameras.



The Los Angeles DOT has developed traffic speed sensor information on most major arterial roads in the city.



Internet based Traveler Information services include information on incidents, traffic speeds, planned road closures, “sigalerts”, and local street traffic conditions. Examples of these services are Traffic Advisory News Network (TANN), Iteris, Traffic 411,

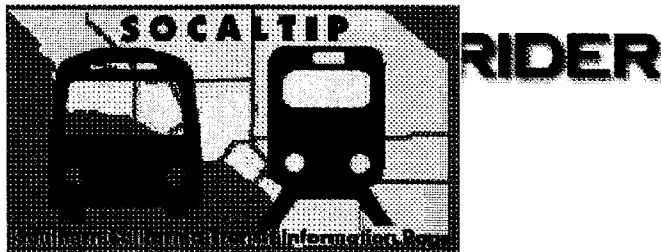
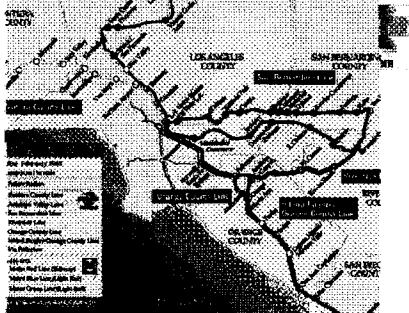
MetroCommute, Sigalert.com, and a host of traffic advisory formats with primarily incident data. Over 5 million real time traffic web pages are published each month in the LA region. Over 1 million people listen to radio traffic reports every quarter hour.

Some notable public and private information web sites include the following.

Caltrans www.dot.ca.gov/travel
OCTA www.octa.net
MTA www.mta.net
Metrolink www.metrolinktrains.com
AMTRAK www.amtrak.com
Antelope Valley Transit Authority www.AVTA.com
Foothill Transit www.foothilltransit.org
LADOT www.ladottransit.com
Ventura County Transportation Commission www.goventura.org

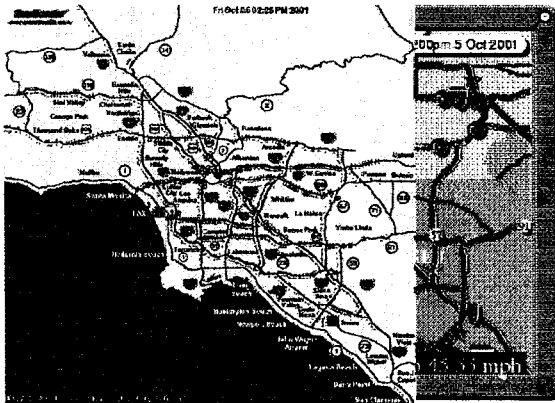
Riverside Transit Agency www.rta.com
Omnitrans www.omnitrans.org
Santa Monica's Big Blue Bus www.bigbluebus.com

TravelTIP www.traveltip.net
Travel Advisory News Network <http://traffic.tann.net>
MetroCommute www.metrocommute.com
Traffic 411 www.traffic411.com
KABC7-TV www.abc7.com
KNX Radio www.knx.com
LA Times www.latimes.com
OC Register www.ocnow.com
Daily News www.dailynews.com
Riverside Press Enterprise www.pei.com

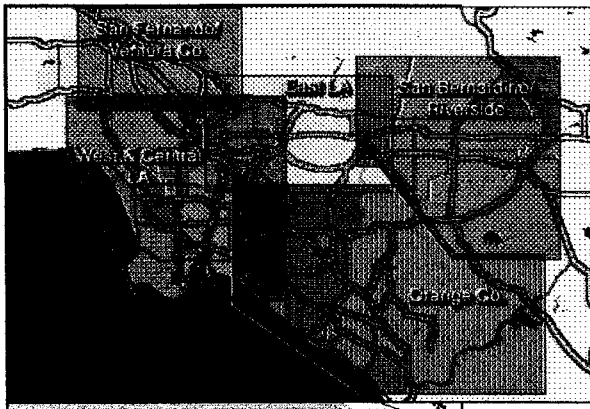


Following are examples of private sector Internet services.

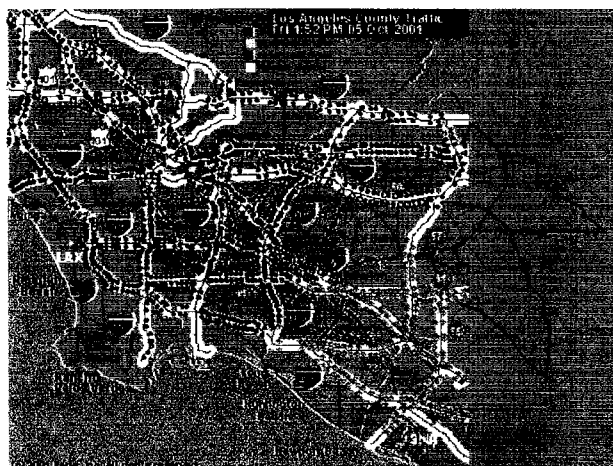
SMARTTRAVELER AND METROCOMMUTE



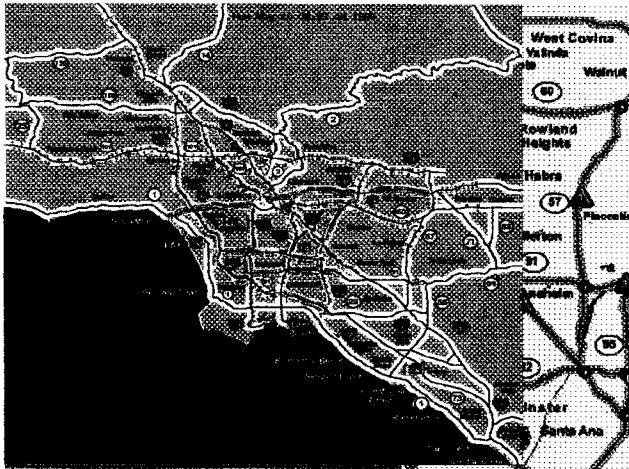
TRAFFIC.COM AND TANN



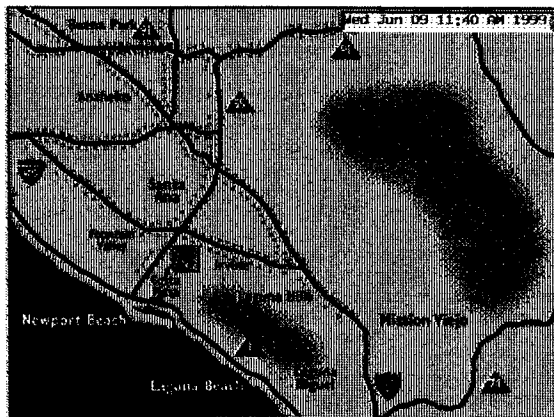
ITERIS AND TRAFFIC ASSIST



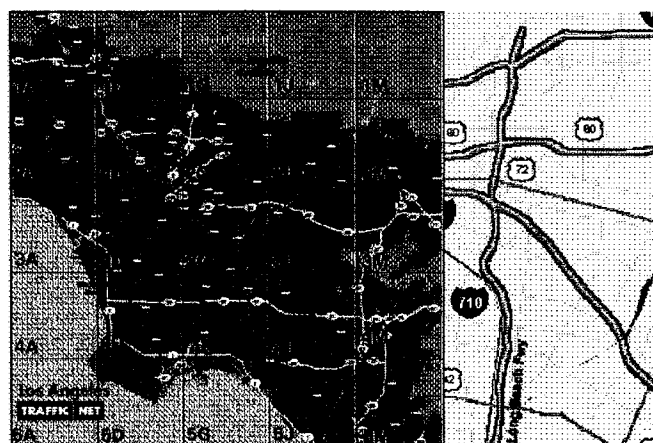
MAXWELL TECHNOLOGY AND TRAFFIC STATION



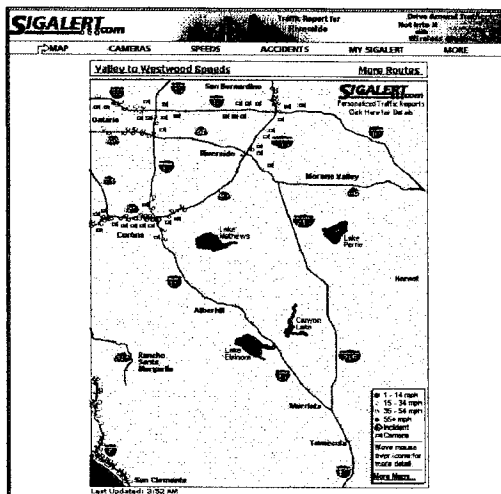
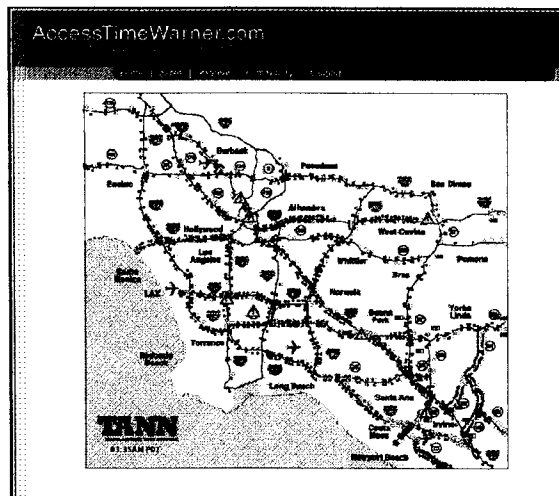
TRAFFIC STATION AND ETAK



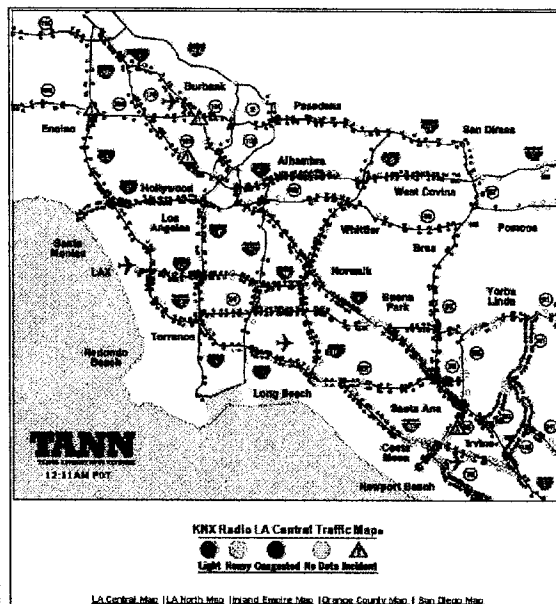
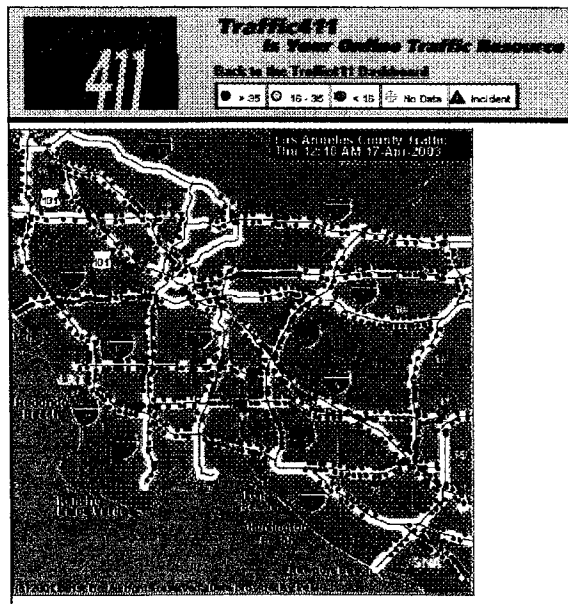
CUE CORPORATION AND TRAFFIC.COM



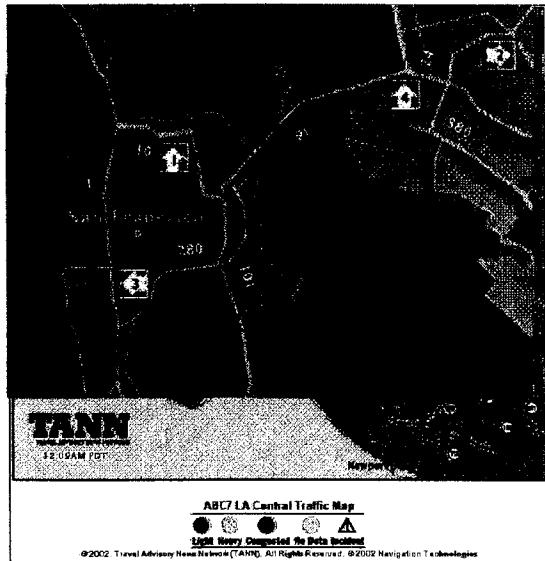
TIME WARNER AND SIGALERT.COM



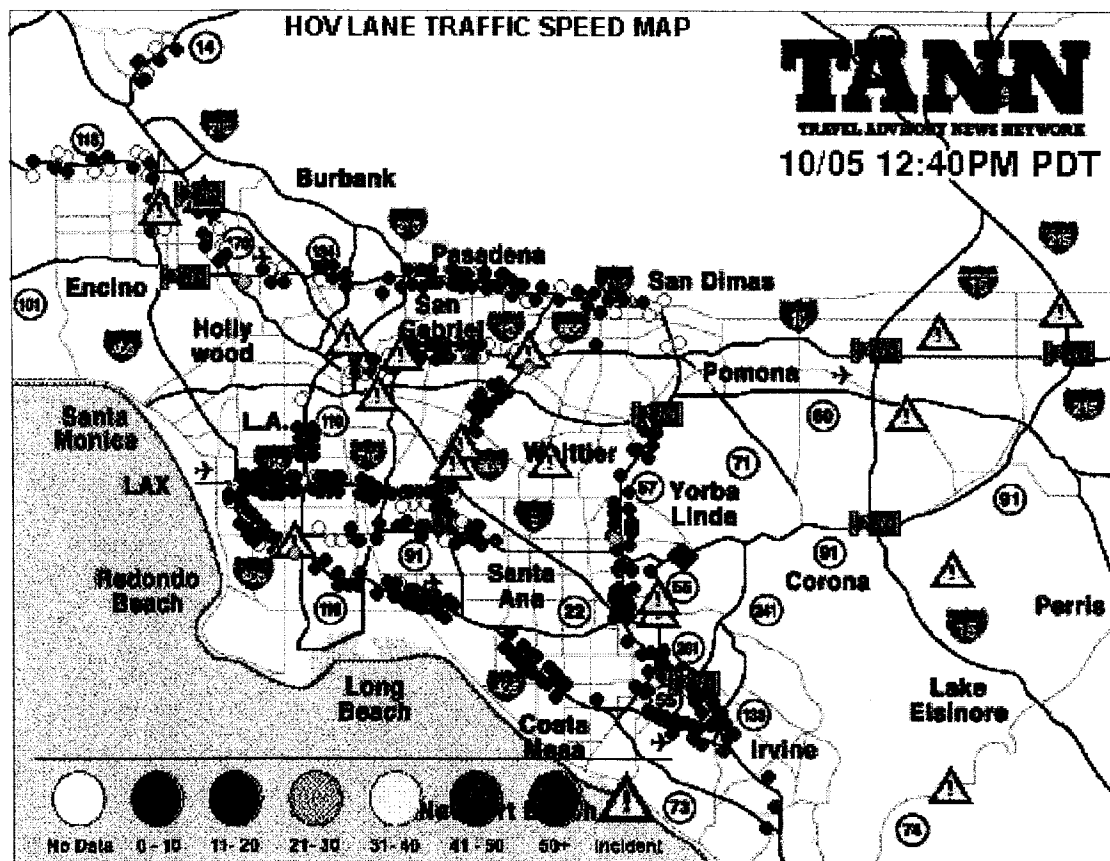
TRAFFIC 411 AND KNX RADIO



KABC7 BROADCAST TV AND CABLE TV PROGRAMMING



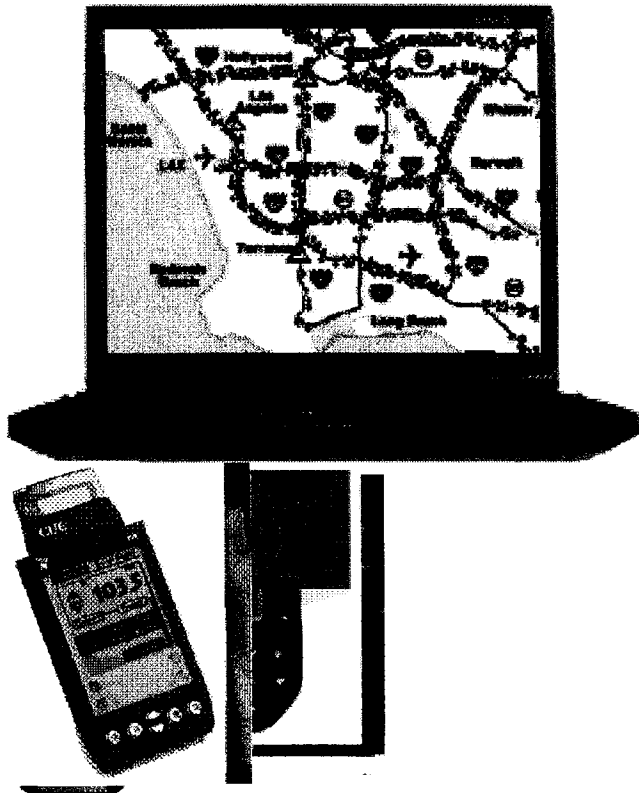
HOV LANE MAPS



Numerous media brands are associated with traffic reports and have a strong reputation for carry a significant amount of real time traffic information in the LA Region.



As a result real time traffic information is available on a wide variety of communications devices in the LA Region.



The availability of various commuter services is published over the Internet in the form of public service messages.

PUBLIC SERVICES MESSAGES

When it comes to getting around Downtown LA, it pays to know your ABCs



DASH
25¢

RIDESHARE 2000 Sharing is Receiving. Earn up to \$2 a Day!

SOUTHERN CALIFORNIA RIDESHARE
A Leader in Commuter Alternatives for 25 Years

45% of our riders formerly drove alone. They now have less stress and save time and money.

RELAX Take the Train

METROLINK
Southern California's Commuter Rail System

Driving Smarter Keeps Our Air Cleaner
And Our Skies Blue



Public Transit Can Get You Anywhere and Everywhere in Southern California

Let **TranStar** Customize Your Itinerary for Free

Attention: Stop Driving Alone. Earn up to \$2 a Day!



OPTION RIDESHARE 909-884-5459


ecommuter

Put Telework to work on your company's bottom line.

Why Are You Driving Alone?

WESTERN RIVERSIDE COUNTY

When You Could Be Earning \$2 a Day Relaxing?



ADVANTAGE RIDESHARE

909-341-9230
800-464-3576

MULTI-MODAL INTERNET WEB SITES

The growth of Internet based traveler information services has been growing in recent years. The use of multi-modal web sites is becoming more prevalent. One example is CommuteOne. The multi-modal CommuteOne web site provides online commuter services for both individuals and employers. This includes vanpool maps, park and ride facilities, carpool lanes, transit information, carpool information, etc. The following graphic illustrates this theme.

VI. IMPLEMENTATION ISSUES

Implementation of the 511 Traveler Information System in a multi-jurisdictional region such as Southern California involves a complex and complicated process. There are many issues that must be addressed such as regional coordination; designation of a single point of contact; how and where to route the telephone call (who will answer the call?); who pays; sources of funding and cost issues; etc.

ITS Joint Program Office of the US Department of Transportation in coordination with the National 511 Deployment Coalition Working Group has identified several key issues (described below) pertaining to implementation and deployment of 511 Traveler Information System. Upon in-depth review it has been determined that the issues identified by the 511 Coalition are applicable to the SCAG region.

511 Deployment Coalition, an executive-level Policy Committee and a supporting Working Group were established to identify and develop guidelines for deployment of the 511 system. Membership of the Coalition draws from all levels and types of government agencies, various segments of the telecommunications industry and the fields of consulting, system integration and information service provider.

a) Regional Cooperation

Implementation of 511 service within a multi-jurisdictional region such as SCAG would require a regionally coordinated strategy. Telephone-based traveler information systems in our region are multi-modal. They include several categories of information such as real time, transit information, ridesharing, information on commuter rail, weather, traffic information and construction. There are numerous transportation agencies, providers and organizations, which use a different telephone number for these services.

With the 511 assignment, it would be possible that all transportation agencies within the region would share the 511 number, making it easier for the traveling public to obtain information. To make a single number, 511, work, it will be essential that all agencies wishing to use the number cooperatively determine the implementation strategy of the service.

Implementation of 511 would potentially require dealing with both the state regulatory agency and the telecommunication carriers in the area. It is important that conflicts on who answers the call be resolved by the transportation agencies rather than the State regulatory agency (Public Utilities Commission (PUC)). The PUC may get involved in conflicting requests for the assignment if the state law gives them jurisdiction. However, the telecommunications companies will not deal with conflicts among agencies. They will tell you to come back when you have all that straightened out.

Therefore, in order for any one agency to use 511, all agencies will have to cooperate to resolve a variety of issues, many of which are described below. Implementation of 511 may be delayed until the agencies can agree among themselves how the assignment should be made.

b) Designate a Single Point of Contact

A lead agency, a consortium or a Joint Powers Authority should be designated (e.g. the State DOT or a Metropolitan Planning Commission, or a contractor as an agent for the public agencies, etc.) to deal with both the PUC and the telecommunications carriers in the region.

(The local telephone companies are referred to as Local Exchange Carriers –LECs - as opposed to long distance carriers.) Communications carriers have a particular way of doing business and a somewhat unique terminology that they use. The carriers have stated that it greatly simplifies getting questions answered and issues resolved between the public sector agencies and the various service providers if there is a single point of contact with whom they can work. Since this is a multi-modal service, there are many agencies involved and a great potential for confusion without a lead agency and a specific project manager designated to work with the LEC and all the wireless carriers.

The agency or consortium that applies for the number will be the responsible party for filing materials with the PUC. The communications service providers will be more cooperative if they are presented with a request from an agency that is addressing the ownership issue for all agencies.

Traveler information systems can be enhanced in terms of the types of information offered. This may involve having a new transportation agency join the system and provide information for distribution. For example, a system that provided traffic information may be approached by a transit agency desiring to make real-time transit information available to customers. A framework for adding new participants to the system should be developed to avoid conflicts between agencies desiring to use the 511 number.

Cooperation on the local, regional, and state level is essential to the success of the project. A framework should be formed for an organization that can equitably represent all potential participants and a procedure for adding new participants and expanding the service area in the future.

c) Contact the State Regulatory Agency

The FCC has the authority to make decisions pertaining to the use of telephone numbers in the North American Numbering Plan. The FCC can, and does delegate some responsibilities to state and local governments. Each state in turn has legislation that determines whether a state regulatory agency will perform any administrative functions concerning telephone numbers.

The designated lead agency/program manager should contact the state regulatory agency, Public Utilities Commission (PUC), or Public Service Commission (PSC), or other nomenclature, to determine if the state regulatory agency has jurisdiction over any facet of N11 number administration. In general, state regulatory agencies that have jurisdiction usually regulate only wireline telecommunications networks. Wireless telephone services such as cellular (e.g. Cellular One), enhanced specialized mobile radio services (ESMR) (e.g. Nextel), and Personal Communications Systems (PCS) (e.g. Sprint PCS) are normally not regulated by a state agency. (Dealing with wireless carriers is discussed later in paragraph f.)

Find out if the state regulatory agency should be petitioned, if a tariff has to be filed, and if there are any specific requirements the state agency will expect the petitioner to meet. Some state regulatory agencies may decide to issue a notice of inquiry, or may decide to develop a set of procedures for assignment of the number. The states that have regulatory agencies that take administrative responsibility for implementing the use of N11 codes may decide to hold public hearings on the issues described in this paper as well as any others raised by the participants. They may also delay assignment of these numbers until they develop administrative procedures for applying and granting the use of an N11 number. Some regulatory agencies will require that “tariffs” are filed, and in all likelihood, this will only be required of the

LEC, not the wireless carriers. Tariffs are the schedule of rates that are charged for specific services. The carriers may decide to define 511 for traveler information as a new service and create a new rate structure. Several states have no legislation giving the regulatory agency jurisdiction or administrative responsibilities concerning N11 numbers. These regulatory agencies are likely to tell the transportation agency applying for the use of the 511 number that the state does not exercise regulatory authority in this matter, and that all arrangements are between the communications carriers and the transportation agencies.

d) How and Where to Route the Telephone Call (Who Will Answer the Call?)

There are several issues related to the routing of a 511 call for traveler information. There are going to be situations where the call could be potentially routed to more than one logical location. For example, Columbia, Maryland is a city half way between Washington, DC and Baltimore, Maryland. Some residents work in one city and some work in the other. When they dial 511, which city will they get information from? Will it be the State? The solution to this issue will depend on regional cooperation. The agencies providing the services in both cities may have to jointly implement an automated call director that will forward the call to the proper city at the caller's prompt. This is only one potential solution.

LEC calling boundaries do not necessarily match up to political jurisdictions. Agencies that are charged on a per-call basis may have to accept calls that are routed from a switching center that serves residents from both within and outside of the desired service area. Also, the call may be considered by the carrier to be a toll call, and the carrier will need to know who to bill; the caller or the service provider. The implementing agency will have to work with the carrier to solve these routing issues.

The routing issue is simplified with wireless service providers. According to some of the service providers contacted as part of this study, they are able in most circumstances to be able to route calls from specific base stations (cell sites) to designated locations. They also often have what are known as sectorized base stations. These base stations have more than one directional antenna. When a base station is located near the edge of a desired service area, the antennas pointed toward the service area can route the call to the proper location, and the antennas pointed away from the service area can refuse the call. The 511 number will be assigned to public transportation agencies only. No private company can apply or own the number. However, the transportation agency may allow a private company, or several companies, to operate the system for them. A number of metropolitan areas currently have public-private partnerships providing traveler information. This arrangement does not have to change if the transportation agency decides to convert the number to 511. Further, these private service providers may be a major asset in organizing the region and dealing with the LECs.

e) Who Pays ?

A basic decision must be made regarding who pays for the 511 call. The FCC report does not require this to be a public service. Transportation agencies may choose to make this a free call to the public. However, agencies may also choose to have the caller pay a charge per call. This may be especially appropriate if there are means available to customize the information for a particular caller. Currently, there are some traveler information systems that are supported by revenues from advertising. Before contacting the telecommunications carriers, this issue should be decided. It should be pointed that the public now pays for information from 411 and 911.

f) Use Competition and Leverage off Other Government Purchasing Power

511-traveler information is *not* a public service required of the carriers. This will be revenue generating service for them - they will make money on 511. Further, if you now have a 7 or 10 digit traveler information number, when you implement 511 the call volume will increase. The Kentucky-Cincinnati experience showed the call volume doubled. This will impact what you pay and how much money the carrier could make.

State and local governments are often the largest single customers of the LEC's. There are existing contracts for service already in place and the Government, as a customer, may have considerable clout in dealing with the carriers, as well as having experienced people who are accustomed to negotiating with the carriers and setting up telecommunications systems. There may be existing contracts that transportation agencies can "piggyback" on. Transportation agencies can investigate what resources and clout the State and Local governments have to deal with the local carriers, and use these resources to try to obtain a lower cost for providing the service.

Competition among carriers, particularly the wireless carriers, can help reduce costs. Wireless carriers may decide to charge subscribers for airtime, as was the case in using 311 for non-emergency police service in Chicago. When 211 was implemented for traveler information in Cincinnati, one cellular carrier charged airtime and the other did not. After several months, the carrier charging for airtime decided that for competitive reasons, they should also make the call free. Charges by the carriers for 511 service should be considered negotiable, and transportation agencies should encourage competition, particularly between the wireless providers. Remember, there is now competition in the local exchange market. The Baby Bells are not the only game in town any longer.

g) Contacting the Carriers

Plan on approaching the LEC first. They will be the implementers of the service on fixed telephones. Some groups implementing 311 have had success in working with the LEC first, and having the LEC coordinate with the wireless carriers. There will be 2 analog cellular carriers in each service area, up to six PCS carriers, and one or more ESMR carriers that will have to implement the service for ubiquitous coverage. If the LEC is willing to approach the wireless carriers on behalf of the 511 applicant, implementation will be greatly simplified.

Some of these carriers may want to provide traveler information to their subscribers themselves. In fact there already may be competing services in your area. This is more likely to occur with the cellular/PCS carriers. For instance, if Sprint wants to provide this for their customers, all 511 calls from Sprint customers could be routed to their service. Indeed, the US DOT has been encouraging the provision of these services by the private sector. However, this is the decision of the local transportation agencies. Further, if an agency allows a carrier to provide the 511 service for their customers, the agency can insist on a certain quality of that service.

h) Sources of Funding and Cost Issues

Funding is an important issue for the telephone service providers. There are fixed and recurring costs associated with implementing a N11 number. The telephone companies will want to know how the system will be funded. They are very sensitive to the political issues surrounding the funding of 911 for emergency communications and the customer response to charges on their

monthly bills for this service. They will be reluctant to participate in any funding mechanism that will either require any significant involvement on their part or will add separate line items to the subscriber's monthly bill.

For existing traveler information systems, the ITS program intends to provide some grant money to help pay for the non-recurring conversion costs to change from a seven or ten-digit number to the 511 number. This program was announced in the Federal Register on August 9, 2000.

There are also recurring costs that have to be paid for items such as leasing lines and charges for every call made to the system. Traveler information systems are eligible for many Federal aid transportation funding programs, including the National Highway System, the Surface Transportation Program, and the Congestion Mitigation and Air Quality (CMAQ) program. For example, some agencies have used CMAQ funds as well as state funds. In California, money from the Service Authority for Freeways and Expressways, the California Transportation Development Act, CMAQ funds, and the State Transit Assistance funds are all used to finance the traveler information system used in the San Francisco Bay Area.

The information does not have to be collected and distributed by a transportation agency. Several of the existing traveler information systems are based on real-time travel information collected and distributed by a private sector company. The transportation agency can contract with a private sector provider to supply part or all of the service.

Several of the existing traveler information services offered by a DOT use Federal and State funds to help pay private sector companies to collect and distribute information provided over the telephone-based system.

The cost of 511 service may be different than what agencies are currently paying for a 7 or 10 digit number. LECs may be required to file a tariff by the State regulatory agency, while the wireless carriers may not have to. Carriers may decide that this is a new service and may present prices that bear no resemblance to charges for other N11 services. If the charges are deemed unreasonable by the transportation agency, they can petition the state regulatory agency for assistance. If the regulatory agency claims they have no jurisdiction, the transportation agency may have to make a case to the state legislature.

In many instances, 511 numbers could be implemented simply by redirecting calls made to 511 to the old 7 or 10-digit number, and both numbers remain active. If the existing number was not a toll free number, there may be the additional issue of paying for toll charges if the 511 call is initiated within the region but is not considered a local call. This is an unfortunate result of switching centers and call routing being independent of political boundaries.

i) Participate in national discussions on traveler information services.

The FCC order has charged the US DOT to encourage a degree of uniformity across the country in what the traveling public can expect from N11. Uniformity of service for a nationwide system may be desired or expected by consumers even though it is implemented at the local level. Customers calling 511 from different locations in different states may, for example, expect to hear a similar greeting or list of menu options when dialing the service. They may also expect consistent terminology when information such as travel conditions, weather forecasts or transit schedules are provided.

The US DOT, in conjunction with ITS America and organizations of state and local governments, is initiating a dialog on the subject of uniformity. Plan on participating in forums and other efforts that will determine how to achieve this objective.

VII. INSTITUTIONAL ISSUES

Regional Institutional Issues Related to 511 "Conversion"

The SCAG region is currently operating 511 type services. Thus, much of the stakeholder response to the 511 relates to the conversion of the existing 1-800-Commute service to a 511 number for access. Issues for regional operators of transit primarily revolve around the institutional issues of how to operate such a system, costs associated with such a system, and particularly the costs of marketing the new 511 concept to an established user base. Little funding is directly available for 511 conversion, although the "technical" costs for this do not appear to be the main concern. Rather, concerns over the changes in, production and distribution of new printed materials, signage, and public awareness campaigns, with significant associated costs, appear to be the important issue that many have identified.

Private Sector "511"

The private sector as was noted previously is experimenting with a variety of efforts to communicate traveler information directly to the consumer, as value added, ad supported, or device content to support the sales of in-vehicle and out of vehicle communications technologies. Some of these services include things such as "Onstar", including versions using revolutionary text to voice and voice to text concepts such as Voice XML. The cellular and "portable" communications industries have been particularly looking at these traffic services as ways to increase market penetration with new user services, or to offer better utility in new and emergent communications technologies, such as broad band. However, these potential private sector deployments of 511 services, are also generally dependent upon access to high quality, reliable, public sector data on "real time" conditions on roads, freeways, and transit.

Public Sector "511"

Caltrans has shown great interest in providing 511 services for rural California and has an effort underway to assess the issues involved with this. The San Francisco Bay area is undergoing this conversion attempt from the established Bay Area "Rides" program. This is a sub task under the 7 year \$47 million ATIS Plan being implemented in that region. A common area of public sector concern is the need to address data. Quality data and information content is crucial to the successful adoption by the public of traveler information which can be used for accurate and timely decision making by the consumer. Since the data is used to "manage" expected time of arrival, adjust time of departure, choose alternative routes, and to shift modes, the public needs accurate, timely, and reliable information. Thus, there is a strong recognition in the public sector of the need to tie any 511 concepts to better data collection and dissemination.

"Generic" 511 Communications Issues

The "generic" 511 issues fall into the category of issues with the telephonic communications providers (landline, cell). These include "who" owns the "rights" to establish 511, is this "regional" or "local". These issues also include how calls would be correlated and distributed to those "answering" and providing information. Landline services would prefer working with a limited set of public agencies, with an established geographic coverage, due to the need to tie this in with established service areas and switching capabilities. Cell operators have a series of issues policy, technical, and marketing. Cell operators have challenged the Federal Communications Commission order on 511 as overstepping the authority of the Telecommunications Act. The cell operators also have questions about tariff and routing issues. And, finally, as noted previously, the cellular operators are to varying degrees interested in potentially marketing their own 511 services to consumers, directly.

511 Business Case

Transit operators currently operate telephonic services for transit schedule and fare information accessible through the 1-800-Commute number as a means of marketing services they operate. The "Business Case" for providing such information is based upon the need to provide services and information about those services to those who rely upon transit, to increase transit ridership and potential farebox recovery, and through improved ridership to reduce congestion and associated impacts, such as motor vehicle emissions. The business case in marketing a service, whether public or private, is clear.

Traffic congestion and incident information also has significant benefits to the public. Based upon research by the Volpe Center, conducted for SCAG, users of traffic information web sites used the information to shift departure times, to avoid trips, to shift modes, and to shift routes taken to avoid known congestion delay. The business case, to the public sector, in the more efficient use of our transportation system through the dissemination of traffic information is clear. What is less clear are the costs and benefits of various technologies for the dissemination of such data. It is expected that the costs of providing traffic data will rise substantially, if it were available on a basis similar to the 1-800- Commute program, through a 511 service. These "cost unknowns" will need to be more clearly defined and the risks associated with the start of a new service better understood to develop a business case for public funding.

Transit and Traffic Master File Access, Reliability, and Cost Issues

Master files of data support the information services. The collection and release of data is critical to the provision of any ATIS or 511 service. The data must be current and reliable. The data must be accessible and the necessary documentation on the data to facilitate it must also be accessible.

The current 1-800-Commute system provides transit data from the data bases provided by the transit operators. Conversion of the 1-800-Commute system to a more "user friendly" 511 number presents only issues of increase call volume costs. Provision of large volumes of traffic and incident data present new issues of scale and scope of demand, and of access and reliability of the data supplied. Today the data for this approach is provided through a number of portals from public agency sources. The CHP CAD System provides data to the media, the CHP web site is available for public access and is captured by some ISP's. Caltrans traffic data is available in BIN Data formats through modem connections at District 7, Caltrans Districts 8, 11, and 12 provide "actual" speed data through FTP addresses, including CMS through ASCII

VIII. IMPLEMENTATION SCENARIOS

Three scenarios are presented as alternatives/options for deployment and operation of the 511 Traveler Information Telephone number in the SCAG region:

1. *Single Public Sector Agency*. This scenario is based on a single public agency to be responsible for deployment and operation of the 511 system. Examples include a statewide organization such as Caltrans; a regional transportation operator such as MTA; a county transportation commission; or a regional planning agency such as SCAG.
2. *Joint Powers Authority*. This scenario would require establishment of a new or utilizing an existing Joint Powers Authority (JPA) represented by of local and regional organizations.
3. *Private Sector*: Under this scenario, a single private entity or a consortium will be responsible for deployment and operation of the system.

Table 2 presents the strengths and weaknesses of each scenario:

Scenarios	Strengths	Weaknesses
<i>Single Public Sector Agency</i>		
▪ <i>Statewide Agency (Caltrans)</i>	<ul style="list-style-type: none"> - Statewide control (rural, urban) - Ability to utilize a master statewide contract -Addresses interregional travel needs -Data collection 	<ul style="list-style-type: none"> -Inconsistent with statewide policies -Financial constraints -Technical and marketing expertise -Lack of focus on provision of highway and transit information
▪ <i>Regional Transportation Operator</i>	<ul style="list-style-type: none"> -Local control -marketing experience in transit -Countywide consistency -Knowledge of customer needs 	<ul style="list-style-type: none"> -Bound by county boundaries -Financial constraints -Focus on transit information
▪ <i>County Transportation Commission</i>	<ul style="list-style-type: none"> -Knowledgeable on local transportation issues -Countywide consistency Multi-modal focus 	<ul style="list-style-type: none"> - Bound by county boundaries - Not all CTCs are transit operators
▪ <i>Regional Planning Agency</i>	<ul style="list-style-type: none"> -Regional focus -Countywide consistency 	<ul style="list-style-type: none"> - Inconsistent with organizational policies. - Not an operator - Need to develop institutional consensus

***Joint Powers Authority
(JPA)***

- Multi-modal focus
- Regional perspective
- Single purpose focus on mission
- Financial efficiency
- Does not create duplication
- Single customer identity

- Need to develop institutional consensus
- Financial constraints
- Process for establishing JPA
- Bureaucratic

Private Sector

- Available expertise
- Market driven focus
- High level of customer service
- Core service business orientation
- Less implementation barriers
- Greater flexibility
- For profit or contracted service

- Expects return on investment
- Financial limitations

VIII. COST ESTIMATES

The cost of deployment and operation of the 511 system in the SCAG region could range between \$4,000,000 to \$6,000,000. This figure is based on the work of the National 511 Coalition. (Appendix 2: Deployment Assistance Report #1: Business Models and Cost Considerations; http://www.its.dot.gov/511/511_Costs.htm)

Table 3: 511 Deployment Cost Estimate

Deployment Stage	Large Metropolitan Area	
	Capital Investment	Operations & Maintenance (Annual)
Stage 1 - Data Gathering	\$0 (system in existence) ²	\$0 (system in existence)
Stage 2 - Data Fusion/Processing	\$1,000,000 to 1,500,000+	\$200,000 to 300,000+
Stage 3 - Telephone Dissemination	\$500,000 to \$1,000,000+	\$100,000 to \$300,000+
Stage 4 - 511 Implementation	\$100,000 to 200,000+	Unknown
Stage 5 - 511 Marketing	\$500,000 - \$1,000,000+	\$2,000,000 to \$3,000,000+
Total	\$2,100,000 - \$3,700,000+	\$2,300,000 - \$3,600,000+

Notes:

1. The Coalition's estimates are based on a metropolitan area of approximately 5 to 8 million people, far smaller than the approximately 16,000,000 population of the SCAG region.
2. SCAG region has an extensive data collection/gathering system in place.

IX. NEXT STEPS

Deployment of 511 system in southern California would require major decisions on several critical issues. These issues range from designation of a single point of contact; how and where to route the telephone call (who will answer the call?); who pays; sources of funding and cost issues; etc. These decisions must be made based on a regional consensus and agreement.

Proposed Next Steps:

1. The region needs to decide on who would be the designated agency/organization to implement and operate the 511 system.
2. Funding sources must be identified for planning, implementation and operation of the 511 system.
3. Convert the existing 1-800-COMMUTE system to a three-digit 511 system.
4. Expand the system for added content for traffic information.

VIII. APPENDICES

Appendix 1: 511 Implementation Guidelines

Appendix 2: Business Models and Cost Considerations

Appendix 1

511 IMPLEMENTATION GUIDELINES

Published by the 511 Deployment Coalition

By following these guidelines, implementers can establish 511 services that will have the same "look and feel" to consumers throughout the country.

511 services are being developed from the "bottom up." State and local transportation agencies, in close collaboration with the private sector, determine where to establish services, and when. The benefits of this approach are that deployers are free to provide innovative 511 services specifically tailored to the needs of their constituents, and resources from many organizations are harnessed to deploy 511. A potential negative consequence of simultaneous independent action is that the resulting national 511 service may not appear well-planned and consistent, from the perspectives of either the users or policymakers.

Content Guidelines

Several categories of information, or "content," are candidates to be provided via a 511 service. Some of these content categories are typical of what is offered through phone systems in operation today. Other categories are extensions into additional public sector services, while others are the likely domains of private service providers. All of these content categories have been examined and considered in developing the guidelines.

The overriding philosophy of the content guidelines is that there are two types of content levels:

1. Basic content - Content that every 511 system should have. Basic content is the focus of these guidelines.
2. Optional content - Additional content beyond basic content provided by a 511 service. Optional content is up to the discretion of the system implementers and can include additional content supported by the public sector and/or private sector supported services. Section C will provide a summary of some possible optional content categories.

In addition, the guidelines include "implementation recommendations" addressing content topics that have been demonstrated to provide value to callers, but are recognized as difficult to uniformly implement. Therefore, while not explicitly part of the basic content package, these levels of content are recommended as part of 511 systems as they are developed and designed, if possible. These guidelines recommend that every 511 system deployed in the U.S. should provide at minimum the basic content as defined in this document. It is this basic content that callers will associate as the core of 511.

A. Basic Content Guidelines

Basic content comes in two general categories:

1. Highway - Information associated with particular roadways in a 511 service area.
2. Public Transportation - Information associated with transit services (bus, rail, etc.) in a 511 service area.

In each of these content categories, the guidelines provide general principles or philosophies and specific guidance on the type of information that should be provided to callers.

Note that a key concept in 511 service planning is that 511 services must be designed to provide information beyond a single agency, mode or content type

Highway Content

As the majority of travel in the United States uses highways, information about major roadways should be a principal part of a 511 system. The core of many existing telephone-based traveler information services is highway conditions reporting. As these systems migrate to 511 access and new systems are established, the following guidance should be considered.

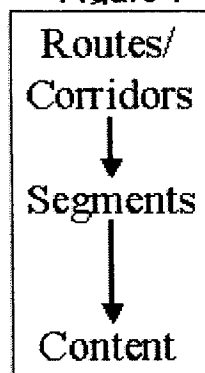
Principles

1. Content is route/corridor-based - 511 services should provide information that is retrievable by route number and/or name. In certain circumstances, if one or more principal roads run parallel, it may be acceptable to provide information on a corridor-basis. However, providing information on major roadways on a broad geographic basis (e.g. "roads in the Northwest portion of the state will be...") is not recommended. When a route/corridor is operated by multiple agencies, these agencies should work together to provide an integrated description of conditions.
1. Limited access roadways and the National Highway System should be the basis for basic 511 highway/roadway-related content - With 40% of the nation's travel, including 75% of truck traffic and 90% of tourist traffic, the 160,000 mile National Highway System should be the focus of basic 511 content. Limited access roadways that are not part of the NHS, likely to exist in urban areas, should also be part of the basic content. (State-by-state maps of the National Highway System can be found at www.fhwa.dot.gov/hep10/data/data.html).
2. More detail needed in urban areas - Given the increased traffic volumes and congestion levels in urban areas, even minor events could have large impacts to travel. Thus, greater content detail is recommended in urban areas.
3. Content is automated - Whether the information provided to the caller is a human recorded message, synthesized or digitized speech, the information is stored and automatically provided to callers. There is no direct contact between callers and human operators to provide basic highway content.

Guidelines

The fundamental structure of a telephone system design matches highways very well. Telephone systems are usually accessed through a "menu tree" that is navigated by voice commands or by touching a phone's keypad. Eventually, a caller reaches their desired destination in the system and either gets a recorded or digitized voice message. When seeking highway information, a caller will first find the specific highway or corridor for which they desire information. The caller will then find the specific segment of highway or corridor they are interested in, if it is a lengthy road. Once the 511 service knows the specific section of highway the caller is interested in, it then provides the caller a report of the relevant basic content. This process is graphically illustrated in Figure 1, with "routes," "segments" and "content" serving as the key descriptors of the content guidelines.

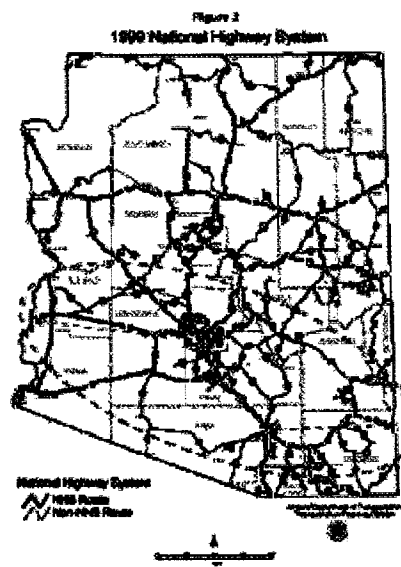
Figure 1



1. Routes/Corridors - Information on all National Highway System facilities/corridors should be available to callers. In urban areas, information on all non-NHS limited access highways should also be available to callers.

2. Segments - In non-urban areas, long routes should be sub-divided into segments. Segment specification is left to the implementer, but should follow logic with segments defined between major towns, landmarks or roadways. In urban areas, segments should be defined between major interchanges and will generally be smaller in length than non-urban segments.

Figure 2 provides a possible example of segmentation, where I-10 in Arizona contains urban and non-urban segments.



3. Content - For each segment, specific types of content should be provided. In non-urban areas, information should include:

Construction/maintenance projects - Current information on active projects along the route segment that may affect traffic flow and/or restrict lanes.

Road closures and major delays - Unplanned events, major incidents or congestion that shut down or significantly restrict traffic for an extended period. In urban areas, information on all incidents and accidents, both major and minor, and congestion information along each route should also be provided.

Major special events - Transportation-related information associated with significant special events (fairs, sporting events, etc.).

Weather and road surface conditions - Weather or road surface conditions that could affect travel along the route segment.

For each of these highway content types, it is necessary to provide details that enable callers to assess travel conditions and make travel decisions associated with a route segment. Table 1 illustrates the detailed information needed for each content type.

Table 1 – Basic Content Detail Needed for Each Highway Content Type

Content Type	Geography		Content Detail					
	Non-urban	Urban	Location	Direction of Travel	General Description and Impact	Days/Hours and/or Duration	Detours/Restrictions/Routing Advice	General forecasted weather and road surface conditions
Construction/Maintenance	✓	✓	✓	✓	✓	✓	✓	
Road Closures/Major Delays	✓	✓	✓	✓	✓	✓	✓	
Major Special Events	✓	✓	✓	✓	✓	✓	✓	
Weather and Road Conditions	✓	✓	✓	✓	✓			✓
Incidents/Accidents (Minor)		✓	✓	✓	✓			
Congestion Information*		✓	✓	✓	✓			

* Major Congestion Information and Incident/Accidents are considered part of the "Road Closures/Major Delays" Content Type

- Location - The location or portion of route segment where a reported item is occurring, related to mileposts, interchange(s), and/or common landmark(s).
- Direction of Travel - The direction of travel a reported item is occurring.
- General Description and Impact - A brief account and impact of the reported item.
- Days/Hours and/or Duration - The period in which the reported item is "active" and possibly affecting travel.
- Detours/Restrictions/Routing Advice - As appropriate, summaries of required detours, suggested alternate routes or modes and restrictions associated with a reported item.
- General forecasted weather and road surface conditions - Near-term forecasted weather and pavement conditions along the route segment.

Content Quality

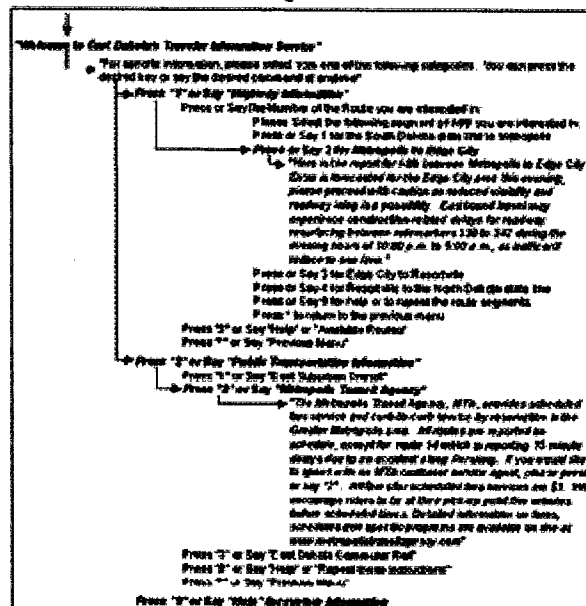
In an increasingly advanced information society, callers are generally accustomed to high quality information. 511 content must be no different. Specifically, 511 implementers must focus on the following quality parameters:

Accuracy - Reports must contain information that matches actual conditions. If the system reports construction events that are not occurring (or worse, does not report a construction event that is occurring) or a road closure is not reported, callers will come to distrust the information provided. If inaccuracies persist, callers will discontinue their use of 511.

Timeliness - Closely related to accuracy, information provided by 511 must be up-to-date. While it is recognized that non-urban areas will have more difficulty collecting, inserting and updating information quickly, every attempt must be made in both urban and non-urban areas to update information as soon as there is a known deviation from the current route segment report.

Reliability - Often, transportation management systems operate during normal working hours. But travelers use highways 24 hours a day, 7 days a week. In fact, often the most challenging travel conditions are at nighttime. Methods must be developed to provide callers a reliable stream of information

Figure 4



C. Optional Content

As indicated, the 511 Deployment Coalition recognizes that additional content beyond the basic content described in the previous section could be provided by a 511 service. In fact, the Coalition encourages, so long as quality basic content is being provided, that 511 implementers consider providing optional content that will benefit callers.

Again, this optional content is up to the discretion of the system implementers and can include additional content supported by the public sector and/or private sector supported services. Based on local demographics or geography, some of these optional content categories would be expected by local callers. Implementers should factor in this expectation in their service planning process.

In providing additional content implementers have essentially two choices:

1. **Go Deeper** – A richer set of basic services could be provided via 511. For example, information on more highway routes, such as major arterials, could be added to the basic system. Or more detailed content could be provided on public transportation services (e.g., detailed choices for automated messages could be provided – service disruptions may be a different selection than parking availability at a rail station for instance – as opposed to a single automated message). Another possibility is that an agency or region could choose to greatly improve the accuracy, timeliness or availability of their information, improving its quality but not adding further content.
2. **Go Broader** – Many additional content categories have been considered for inclusion in 511 services, but are not part of the basic content package. The following list is representative, but not exhaustive, of the possible optional content categories. Implementers may choose to implement these and other types of content (Please note that the 511 Deployment Coalition is not assessing the merits of each of these content options, merely providing them for the readers consideration):
 - **Tourist Information** – Specific information about local tourist attractions, tourist information centers, convention and visitors bureaus, etc. Could be recorded messages or connections to live operators.

- **Special Events** – Information pertaining to major special events occurring in a service area. The information may go beyond transportation-related information to include event-related information such as times, locations, event descriptions, etc.
- **Parking** – Parking location and possibly parking lot status information.
- **Local Information/Points of Interest** – Information such as restaurant locations, gas stations, taxis, etc. Could be extended to include reservation services.
- **Interregional Information** – Information pertaining to transportation conditions in other, perhaps adjacent, regions. Examples include extension of an interstate travel corridor or a major city in an adjacent state.
- **Driving Directions** – In a voice-activated 511 service, callers can provide their location and their desired destination and obtain driving directions. These directions could be based upon real-time conditions and/or can include estimated trip travel time if such information is available.
- **Public Transportation Trip Itinerary Planning** – In either a voice activated or operator-assisted environment, callers can obtain transit trip plans that could include routes, transfers, costs and trip times.
- **Multimodal Routing and Trip Planning** – Integrating information from multiple modes (highways, transit, rail, air, etc.), callers can obtain a complete trip itinerary that is as efficient as possible, regardless of mode.
- **Incident Reporting** – 511 is intended primarily as an information source for callers. However, systems can be designed such that callers could report incidents through 511 as well, either by communicating directly with an operator or by leaving a voice message.
- **Local Transportation Facilities Information** – Callers can obtain information about major transportation facilities in the 511 service area, including airports, train stations, ferry, freight, and cruise ports. Information could include parking and traffic conditions associated with the facilities.
- **Local Transportation Services Information** – Callers can obtain information on transportation programs in the 511 service area, such as carpools and vanpools.
- **Concierge Services** – Operators can provide any of the above information to callers. These operators could also handle additional services, such as reservations and purchases.
- **Personalized services** – Callers can provide profiles of their normal travel patterns and the system, by recognizing the phone number of the caller, can provide a complete report along the caller's route (e.g., the conditions on a commuters complete normal route), without requiring callers to locate and review reports on multiple route/corridor segments.

In examining the addition of optional content, system implementers should be careful to design a system that complements – rather than diminishes – the impact of the basic content services. Also, each of the options listed above may require extra and complex interactions to provide via 511. As these are intended to be illustrative examples, assessments of the relative practicality or merits of each optional content category are not provided.

Consistency Guidelines

511 service consistency is important for at least two reasons:

1. In its order, the FCC "encourage[s] federal, state, and local government transportation agencies to work cooperatively to ensure that the transportation information provided using 511 is appropriate to the national scope of our designation and the scarcity of the N11 public resource." In other words, the FCC expects the transportation industry to deliver a consistent 511 service nationally.
2. With the possibility for the first time of dialing the same number for information in multiple regions, consumers could expect similar service in regions served by different systems. In fact, the traveling public is likely to be completely unaware that 511 services are separate systems. In other words, callers will likely expect and even demand consistency of 511 services.

To provide implementers a blueprint as to what they can do to maximize service consistency, the 511 Deployment Coalition has developed these Consistency Guidelines. These guidelines represent the culmination of a process nearly a year long and have been developed based on a philosophy of providing flexibility to implementers at this early stage while ensuring that callers will recognize the services as part of a national system. But the need for the "look and feel" of basic 511 services to be the same no matter where a customer accesses the service is of utmost importance.

These guidelines are written to balance these twin desires of implementation flexibility and consistent caller experience.

Sixteen issues, have been identified and grouped into two logical categories: What the Caller Hears and System Considerations.

In this section each issue will be briefly described and the recommended guidance will be provided. To support establishing version 1.0 of these guidelines, short background papers were developed for each issue describing the issue, the options and the rationale for the guideline further, as well as providing or referencing additional supporting information. These papers may be found online at <http://www.its.dot.gov/511/511.htm>.

1.What the Caller Hears

1.1. User Interface

Issue: The ease and methods of access that callers have to desired information once a call is initiated.

Guideline: Implementers are encouraged to use voice recognition as the primary user interface. For voice activated systems, the following top-level commands should be used when a system has the relevant information available (this is based upon the current draft content guidelines): "Highway Information," "Transit Information," "Airport Information," "Rail Station Information" and "Ferry Information." Top-level menu commands beyond the basic services are acceptable. Care should be taken when adding additional top-level commands to select descriptive terms and not to conflict with the basic terms noted here. Although discouraged as a primary user interface means, systems that utilize keypad entry for navigation should use the following top-level menu tree: 1 for "highway information," 2 for "transit information" and 9 for "help using the

system." Although not defined as part of the basic content package, 3 should be reserved for "airport and other major terminal and transportation facility information." Systems that use both keypad entry and voice activation should allow callers to press or say the top-level number ("press or say 2 for transit information").

Overly complicated menu trees should be avoided. Systems should not require the user to make more than 3 entries or replies before providing the desired information. At each level, no more than 6 options should be listed. Systems should allow users to request messages be repeated and to "go back" in the menu tree.

"Shortcuts" are used often by repeat callers who know what element of information they are seeking. The use of shortcuts is encouraged. It is possible that a future update of these guidelines could include specific guidance on shortcut methods, but no detailed guidance is given at present.

1.2. Initial Greeting

Issue: What the caller hears upon starting a call.

Guideline: Based on focus groups, the initial greeting should be very short, such as "Welcome to (metro area's, state's, or program name's) 511 for Travel Information." Customers expect a short verification that they dialed correctly, but comment that they do not want a lengthy introduction or long formal enunciation of agency names. Supplemental information such as website addresses or complete help instructions should not be included in the initial greeting but provided through menu selections. In the cases of major emergencies, an emergency message may be provided prior to or in place of the normal initial greeting.

1.3. Commercial Advertising and Sponsorship

Issue: The parameters that should be used when a 511 service includes commercial advertising and/or sponsorship.

Guideline: Commercial advertising and sponsorship of 511 services, either in an initial greeting or in conjunction with a specific element, such as a message or content category heading, of a 511 service is acceptable. However, care should be given to ensure that the length of advertising messages does not overly inconvenience callers and that the content of these messages are consistent with the public service nature of 511. This guidance applies to the initial greeting and messages prior to the caller getting the information that they are seeking.

1.4. Fee Notification of Premium Services

Issue: Informing callers when they are seeking fee-based information or services.

Guideline: If a 511 service offers premium content – content beyond the basic content – options for accessing this content should be provided after basic content access options. If offered for a fee, callers must be informed when they have selected a premium content or service and what the cost of the content or service is prior to usage. Callers must opt-in before charges are incurred.

1.5. Multi-lingual Capabilities

Issue: Access to 511 services for Limited English Proficient (LEP) callers.

Guideline: 511 Implementers should review Executive Order 13166, signed by President Clinton on August 11, 2000 and the supporting "Guidance to Recipients on Special Language Service to Limited English Proficient (LEP)

Beneficiaries" issued by U.S. DOT on January 22, 2001 to determine its applicability.

1.6. Time Stamping of Information

Issue: Providing a time/date identifier to provide callers with a sense of reliability and accuracy of the information provided.

Guideline: Caller expectations are for timely information. If a 511 system provides basic content quality as defined in the content guidelines, then time stamping the information is unnecessary and undesirable. If a system knowingly provides information that is updated not as conditions change, but based upon a periodic schedule, then the schedule should be communicated to callers in association with the particular message.

2. System Considerations

2.1. System Access Quality

Issue: The ability of the telephone system to reliably and quickly answer calls.

Guideline: 511 systems should be sized to accept all calls for the 90th percentile peak hour load [1]. If live operators are utilized or connected to as part of a 511 service, 90th percentile wait time should not exceed 90 seconds, and callers should receive indications that they are on hold. 511 services should have an availability to callers of 99.8% (out of service less than 18 hours a year). System performance against these parameters should be measured and monitored.

2.2. Hours of System Operation

Issue: The days and hours that 511 service should be available to callers.

Guideline: 511 systems should be available 24 hours a day, 7 days a week. It is recognized that systems will not always be "operated" 24/7. In instances when the system is providing static, pre-recorded messages, systems should inform the caller that it is outside normal operating hours.

2.3. ADA Implementation

Issue: Complying with accessibility laws and regulations.

Guideline: 511 implementers need to consider that under Section 255 of the Telecommunications Act of 1996, carriers and equipment manufacturers must provide access to and make their services and products usable by individuals with disabilities, "if readily achievable." Title II of the Americans with Disabilities Act prohibits public entities (states, local governments, and any department, agency, or other instrumentality of state or local government) from discriminating against those with disabilities in all services that they provide to the public. 511 implementers should include in their design plans how they intend to provide access to these services to the disabled community, such as through the carriers' existing TRS or TDD capabilities.

2.4. Environmental Justice

Issue: The relationship of 511 and environmental justice principles that prevent discrimination against minority and low-income populations.

Guideline: The Civil Rights Act of 1964 and a 1994 Presidential Executive Order address the Federal government's responsibilities to assure that programs or activities receiving federal financial assistance adhere to environmental justice principles that prevent discrimination against minority and low-income populations. 511 services that use Federal funds must adhere to these rules.

2.5. Standards

Issue: 511 and National ITS standards.

Guideline: Significant resources have been invested to develop ITS standards that will simplify and expedite the deployment of interoperable systems. 511 implementers should review the full range of standards available and consider using those that will aid in cost-effective system development and/or inter-system interoperability.

2.6. Privacy

Issue: Privacy protections for callers.

Guideline: 511 services should adhere to ITS America's Fair Information and Privacy Principles.

2.7. 911 Linkage

Issue: Relationship of 511 services to 911 services.

Guideline: While it is technically feasible to transfer a call made to 511 to a 911 call center, implementers should examine a number of key issues that must be considered before choosing to do so. Any region considering this capability must research the liability and privacy issues associated with 911 call processing. The liability protection currently offered the telecommunications industry and 911 call center operators does not apply to transportation agencies or their contractors. Also, there would be both non-recurring and recurring costs to the implementer of this capability. (See Section VI for more information on this subject.)

2.8. 511 Branding

Issue: The creation of a brand identity for 511 services to manage consumer expectations.

Guideline: The 511 designation is a brand like "Intel® inside." Local implementations of 511 should incorporate whatever collateral (greeting, logos, signage, etc.) the national effort develops in conjunction with the local ATIS brand that is being marketed. 511 callers must realize that the local 511 implementation is part of a national program with certain requirements for quality and content. Also, where appropriate, implementers should consider promoting alternate means of access to information that is available via 511, such as Internet websites.

2.9. Number Allocation and Service Coordination

Issue: Organizing and coordinating transportation agencies in a given region to determine what 511 services will be offered, by whom and in what geographic area(s).

Guideline: State Departments of Transportation should accept the lead facilitating role for planning how 511 services will evolve in their state. In this role, state DOTs should work closely and in partnership with other transportation operators in their state. State DOTs should also lead coordination efforts with the state's public utilities or service commission. In regions where multi-state cooperation is logical, state DOTs should coordinate with one another so that service regions make sense to callers.

2.10. Inter-regional Interoperability

Issue: How 511 services interconnect.

Guideline: This issue has been flagged as a future issue, but one in which a guideline cannot be established at this time.



Issues

• 16 Issues, 5 Categories

What the Caller Hears

- User Interface
- Initial Greeting
- Commercial Advertising and Sponsorship
- Fee Notification of Premium Services
- Multi-lingual Capabilities

What the Caller Doesn't Hear

- 911 Linkage
- Time stamping of Information

Marketing

- 511 Branding

System Considerations

- System Access Quality
- Hours of System Operation
- ADA Implementation
- Environmental Justice
- Use of Standards
- Privacy

Inter-regional Issues

- Number Allocation and Service Coordination
- Inter-regional Interoperability



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Appendix 2

Business Models and Cost Considerations

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IV. Potential

Business Models

There are many varied business models that have been applied to traveler information, most of which have yet to prove themselves viable. It is important not to dismiss the less successful models, as they were pursued amid rapid technological change, volatile information technology markets, and evolving telecommunications availability. *Simply put, the jury is still out on innovative cost and revenue sharing approaches to ATIS service delivery.* An important realization that has emerged in the past decade is the public sector's role providing most of the data and a stable stream of resources and the private sector role of developing and operating the traveler information system.

Various state Public Utilities Commissions have stated that assessing a monthly surcharge to every consumer's telephone bill is not an option for funding 511. There is no federal mandate accompanying the FCC designation of 511 for ATIS, so this method of cost recovery was not explored and is not recommended.

The following descriptions of business models address the entire ATIS program, not just 511. Throughout this document, however, we will attempt to separate the costs to deliver 511 from overall ATIS delivery. (Please see section VI - Cost Elements and Issues for an implementation hierarchy for those wishing to deploy an ATIS system and make use of the 511 dialing code).

Public Sector Funded Model

(The 511 Business Models Group anticipates that this is the most likely approach for a basic service implementation.)

Constituents such as Government agencies may elect to pay for most or all of the service provided to the end user. This would reduce the hurdle rate for other cost recovery methods (like selling advertising) and provide a valuable service to the end user. This model places the financial responsibility on the public sector and assumes that the call costs no more than a local call to the user. Delivery of services to the end users is more likely to be public oriented and, as with all models, the cost of telecommunications or other delivery methods will vary widely [8].

Subscription Model

(This model conflicts with the 511 Policy Committee decision of making a 511 call "no more than the cost of a local call to the user.")

The subscription model suggests that the end-user of the service subscribe or become subscribed to the 511 services for a fixed monthly or yearly fee. For this fee, the subscriber should have access to the service on an unlimited or bulk basis. This service can either be offered on an opt-in or an opt-out basis. In the opt-in scenario, the service provider can market the services in order to entice the end-user to sign up for it. An example of the opt-in scenario would be Qwest Wireless who charges \$4.95 per month to subscribers who want the service. An opt-out scenario is one where a caller is automatically subscribed to a service by completing the call *unless* they take some action to cancel the subscription. (Magazine publishers and credit card companies often use this method to lure new customers. A customer agrees to a "sample" of the service,

but must take direct action informing the provider that you wish to cancel the subscription before being charged for it.)

Pay-Per-Call Model

(This model conflicts with the 511 Policy Committee decision of making a 511 call "no more than the cost of a local call to the user.")

The per-call model charges the end user for the service on a call-by-call basis. This allows the Service Provider to charge for the specific cost of the call and then bill the end user through their existing phone service. As an example, Verizon in Massachusetts charges \$0.35 each time an end user accesses Directory Assistance.

Advertising and Sponsorship Model

Under this model, advertisers and sponsors would have the ability to place ads throughout the service, covering the costs of the service itself. Services that have the potential to drive sufficient call volume will be able to command a higher price for ad placements. As an example on the Internet, information based services such as Yahoo's website generate 90% of their revenue from selling ads onto their service. However the prices that these high-traffic web sites were able to command in the late 1990's have themselves been reduced in the last year.

It needs to be recognized that models based on using non-traditional media - those other than radio, print, and television - often are very difficult to sustain, and have significant costs associated with the sales cycle or may require at least regional to national coverage before reasonable revenue projections can be met. For example: Wal-Mart is approached to purchase advertising on or to sponsor a 511 service. In order for Wal-Mart to "get their monies worth," the service would need to guarantee a minimum number of callers *and* cover a geographic area larger than one metropolitan area. Otherwise, the advertising department would more than likely spend their money buying radio or television advertising time instead, as many radio stations and some TV stations cover more than one market by virtue of their broadcast power, and carriage on cable and satellite services [9].

Finally, the service provider would need (and be willing to pay) a sales force to sell these advertisements. True, salespeople are traditionally paid from commissions on sales they make, but there would need to be enough revenue from the advertising to support this staff on a continuing basis.

Loss-Leader or Franchise Model

Under this model, the 511 service provider (ISP) would underwrite all or a portion of delivering the service in exchange for the opportunity to market and up-sell the caller additional services and/or the opportunity for other special privileges associated with a franchise agreement. This model was used by SmartRoute Systems in Detroit wherein SmartRoutes agreed to deploy and operate an ATIS and traffic management system in exchange for the exclusive right to market public sector data [10]. It was also used by Trafficstation to secure an agreement in the New York tri-state area wherein Trafficstation was to build and operate an Internet web site whose operation would be sustained through advertising and subscriptions to enhanced services [11].

Hybrid Business Models

If innovative models are used to support 511 services, it is likely they will occur in a hybrid fashion. It should be noted that public sector support would very likely be needed for the basic level of 511 service. Unless a change is made to the Policy Committee

decision on the price being no more than the cost of a local call to the user, funding is required to sustain day-to-day basic operations until such time as private revenue can grow and *perhaps* be used to defray the public sector funding.

The following are examples of hybrid models, which may be applicable in certain areas to help offset costs to implement a 511 service. In any of these and other examples, telecommunications carriers may have an unspecified role in the process. If the telecommunications carrier sees a light at the end of the tunnel (such as billing or consuming more wireless minutes, offering advertising, or up-selling [12] to a premium service), then they may offer to fund a portion of the service. This has been successful mostly in markets where the carriers could see the benefit of "partnering" with a government agency.

This summary table below reflects the development of a cost estimate for the data collection and data processing components of a 511 traveler information system. The cost for the data collection and data processing is presented as a range with the low end representing the cost for a generic medium metropolitan area and the high end representing a generic large metropolitan area. The cost estimate is based on a zero baseline. That is, no existing underlying infrastructure is in place.

	Medium [14] Metropolitan Area		Large [15] Metropolitan Area	
Deployment Stage	Capital Investment	Operations & Maintenance (Annual)	Capital Investment	Operations & Maintenance (Annual)
Stage 1 - Data Gathering	\$16,500,000	\$970,000	\$40,500,000	\$2,400,000
Stage 2 - Data Fusion/Processing	\$465,000	\$15,000	\$485,000	\$24,000
Stage 3 - Telephone Dissemination [16]	\$100,000 ~ \$650,000	\$30,000 ~ \$100,000	\$100,000 ~ \$650,000	\$30,000 ~ \$100,000
Stage 4 - 511 Implementation [17]	\$20,000 [18] ~ Unknown	Unknown	\$20,000 [19] ~ Unknown	Unknown
Stage 5 - 511 Marketing	Unknown (see detail in explanations)	Unknown (see detail in explanations)	Unknown (see detail in explanations)	Unknown (see detail in explanations)
Total	\$17,085,000 - \$17,615,000+	\$1,015,000 - \$1,085,000+	\$41,105,000 - \$41,635,000+	\$2,454,000 - \$2,524,000+

Cost Elements "Rules of Thumb"

The Cost Issues paper (dated 03/16/01) that was drafted for the 511 Policy Committee Retreat in Tampa Bay, FL at the end of March 2001 cited some general "rules of thumb" for costs encountered in 511 service provision. *Note that some of these costs may include overall costs to operate a traffic management and information facility as well:*

- *Highly automated, limited or no human involvement in operation:* These are the least costly systems to establish and to operate. In Arizona, such a system was created for roughly \$100,000. Maintenance costs are minimal, roughly \$10,000 annually.
- *Automated system, with human recorded information:* These systems are typical of the metropolitan traffic/multi-modal services. To establish such a service could cost \$500,000 to \$1 million. A rule of thumb for system operations would be \$1 million annually, with that figure varying due to many factors including size of region, hours of operations, etc.
- *Human operator-based system:* Typical of transit information services, these systems are the most costly, as many full time staff could be required to provide the service. Many services are paying in the millions to create a trip itinerary planning system that operators can use to more quickly and accurately respond to caller inquiries. An annual operating budget for a large transit information center can exceed \$4 million.
- *Telecommunications costs:* A good rule of thumb is \$0.25 per call, though of course it varies based on implementation, mix of calls, etc. However, the cost of any physical telephone lines is not included in these costs.

In a large metropolitan area, with a system that receives between 60,000 and 100,000 calls per day, this could translate into \$100,000 and \$650,000 for the IVR system alone; \$100,000 to operate the IVR, combined with operations costs for data gathering and fusion systems, totaling over \$2.4 million in O&M costs annually; and an estimated \$6.5 million annually in communications costs for a 250 business day cycle.

Summary

Based on the assumptions and methodology presented above, the estimated cost to implement the data collection and data processing components of a 511 traveler information system range from \$41 million for a generic large metropolitan area to \$17 million for a generic medium metropolitan area (see [table 1](#)). The O&M cost estimates range from \$2.4 million for a generic large metropolitan area to \$1 million for a medium metropolitan area. The O&M costs are approximately 6% of the capital costs. The data collection component is by far the most expensive piece of the 511 traveler system. The major cost drivers for both generic large and generic medium metropolitan areas are the telecommunications infrastructure and loop detection systems.